EXAMINING THE SYNTAX AND SEMANTICS OF ASL MORE- AND BEAT-CONSTRUCTIONS

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ABSTRACT

Kentner, Ashley Ph.D., Purdue University, August 2020. Examining the Syntax and Semantics of ASL MORE- and BEAT-constructions. Major Professor: Ronnie B. Wilbur.

Comparisons provide an important tool for exploring the syntax and semantics of gradable properties. American Sign Language (ASL) appears to have several such constructions, but they have yet to receive much linguistic analysis. This study establishes basic empirical facts concerning clausal boundaries, constituency structure, compatibility with various indicators for the presence of degrees, and composition of the standard of comparison for the MORE- and BEAT-construction in ASL. Such facts are needed for any formal syntactic or semantic treatment of the constructions. Motivated by typological observations, this study proposes that a reasonable set of initial hypotheses is that the ASL MORE-construction is a comparison of degrees and that the BEAT-construction is a comparison of individuals (as both terms are defined in Kennedy 2007). Results from the tests conducted in this study are largely consistent with those analyses, but also show where there is room for further refinement. Results additionally demonstrate that both MORE and BEAT qualify as explicit rather than implicit comparatives, confirming previous work in Wilbur et al. (2018) concerning the latter. An incidental finding of this study involves the distributional patterns for two modifiers frequently used with gradable properties, *intensive aspect* and Y-OO, indicating both have a semantics distinct from that of the English *very* even though frequently translated between English and ASL with that modifier. Finally, this study contributes to the discussion of comparison constructions cross-linguistically by illustrating the need to conduct cross-linguistic work that looks beyond what is considered the default comparison of the languages under investigation.

1. COMPARISONS OF SUPERIORITY IN ASL

American Sign Language (ASL) has multiple structures for creating comparisons of superiority, structures wherein two entities are ranked with respect to a particular property and where the entity possessing more of the property in question is foregrounded. However, little is known about how these comparison constructions differ from one another in ASL, particularly with respect to their syntax and semantics. This study focuses on two of these comparative structures, herein referred to as the MORE- (1.1) illustrated in Figure 1.1, and BEAT-constructions (1.2), illustrated in Figure 1.2.

(1.1) ASL MORE-construction

F-I-D-O IX3 MORE WET THAN PRINCESS

'*Fido is more wet (wetter) than Princess.*'

(1.2) ASL BEAT-construction

F-I-D-O WET BEAT PRINCESS

'*Fido's being wet beats Princess's (being wet).*'

In each construction, there is a standard of comparison (*Princess*) introduced by a standard marker (BEAT/THAN, respectively) against which the comparee (*Fido*) is measured with respect to a comparative predicate (*wet*). Also, in each construction, it seems to be understood that the comparee possesses the properties of the comparative predicate to a degree that is greater than the degree to which the standard of comparison possesses the same property.

The primary aim of this study is to establish key differences between the two constructions so as to then posit a working syntactic-semantic analysis of each within

Figure 1.1.: F-I-D-O IX3 MORE WET THAN PRINCESS

minimalist syntax and formal semantics traditions. This will be further contextualized within a cross-linguistic framework.

Because the results of this research will be of interest to a variety of disciplines and sub-disciplines, I will take care throughout to make this dissertation as accessible to a general audience as possible. For the most part, this will mean providing as much background information as space and scope allow. For ease of reading, I will take care to signal throughout which sections provide background knowledge that contextualize the study but that some readers may already possess. To that end, I would like to take the time to introduce some pertinent information about ASL as

Figure 1.2.: F-I-D-O WET BEAT PRINCESS

well as about the multiple ways it has of expressing comparison before outlining the various research questions for this study.

1.1 Brief Background on ASL

There are two general categories of background information about American Sign Language that will be helpful moving forward, particularly for readers less familiar with signed languages, generally, or with the linguistics of ASL, in particular. The first category is primarily social in nature and includes historical and cultural information, particularly focusing on language transmission. The second category is primarily linguistic in nature and covers basic syntactic features of the language. I will reintroduce facts covered in these sections as they become relevant throughout the course of this dissertation, so readers already familiar with either of these areas should feel free to read ahead and/or skip around based on section headings as they so desire. However, readers without such background knowledge in either or both areas may appreciate the more detailed overviews provided here.

1.1.1 Historical and Cultural Backdrop of ASL

To study a language in any capacity, it is essential to have an awareness of the historical and cultural context that the language is embedded within, and to understand the historical and cultural context of ASL, it is necessary to examine the history of deaf education in the United States. This education system, until rather recently, has largely centered around various institutes for the deaf. These institutes have served as hubs for the formation, transmission, and development of American Sign Language and Deaf culture in the United States.[1]

The early formation of American Sign Language more or less began with the development of one of the first institutes for the deaf in the United States, an occasion which brought French Sign Language, Martha's Vineyard Sign Language, and several other village sign systems into contact with one another in 1817. The educator

[1]Throughout, I follow the convention of using capital letter "Hearing" and "Deaf" to refer to cultural norms and attitudes and lowercase "hearing" and "deaf" as a physical description. It is possible to be physically hearing but culturally Deaf, as is the case for many Children of Deaf Adults (CODAs) just as it is to be deaf but culturally Hearing, as is the case for many who become deaf as the result of age.

Thomas Gallaudet had gone to Europe to learn different methods for instructing deaf students and had been impressed with the methods of Charles-Michel de l'Épée, which relied on the use of signs rather than lip reading or other methods of communication. Laurent Clerc, a deaf student of l'Épée's, agreed to leave France for New England in order to help establish an educational institution for the deaf in Hartford, Connecticut. Clerc brought French Sign Language with him while his pupils brought various signing systems and languages with them as well. Home sign systems are methods of communication that arise between close friends, family, and care takers of a deaf individual. While home sign systems are highly individualized and tend to lack full grammaticalization of various linguistic features, a number of Clerc's students used Martha's Vineyard Sign Language. This was a signed language that developed in a community with a high rate of congenital deafness and was used by both deaf and hearing members of the community (Lane 1984, Groce 1985). Contact between these two signed languages as well as the various home sign systems as well as the passage of time gave rise to a new signed language, ASL (J. Woodward 1978).[2]

After the development of ASL, many instructors, both deaf and hearing, developed institutes in other parts of the country, taking the language with them. Distinct dialects that largely centered around these institutions developed. It is important to note that racial as well as geographic separation played a role in the development of a variety of forms of the language.[3] That is, it is important to remember that ASL is not one monolithic language, but instead is a term that encompasses a large variety of mutually intelligible dialects.

The use of ASL as the predominant means of educating deaf children in the United States was replaced with the pedagogical theory of oralism after the International Congress on Deaf Education in Milan, Italy in 1880. Under oralism, the goal of educating deaf children is to enable them to pass through the world as though they

[2]See, among others, Lane (1984), Lupton & Salmons (1996), Shaw & Delaporte (2011), Supalla & Clark (2014) for more on the history and development of American Sign Language.
[3]For information on racial and geographic varieties of ASL, see J. C. Woodward (1976), Shroyer & Shroyer (1984), Lucas (2001), Lucas et al. (2001), Lucas, Bayley & Valli (2003), among others.

were hearing. Thus, primacy is placed on the ability to lipread and to speak. Under this pedagogical philosophy, ASL is easily denigrated as broken English and myths centered around promoting spoken language and suppressing signed language flourish. Some of these myths, such that learning ASL will somehow hinder a child's ability to acquire English, persist to this day, even among audiologists, speech pathologists, and educators.[4]

Though the use of ASL was often prohibited in oralist schools, ASL nevertheless survived, in part because institutes for the deaf are often, essentially, boarding schools. This makes it possible for deaf children to acquire ASL from their (near) peers, though there is no guarantee that they will do so. It is important to understand this frequent mechanism of transmission as best estimates indicate that at least 90% of children born deaf are born to hearing parents (Mitchell & Karchmer 2004). If these children acquire ASL at all, their age of initial exposure may vary significantly, possibly starting closer to the age of 5. Furthermore, their language input may come from (near) peers rather than from adults. To be clear, generational, inter-family transmission of ASL does take place with both deaf and hearing children (referred to as deaf-of-deaf and Children of Deaf Adults–CODAs–, respectively). However, it is not necessarily the most common mode of transmission for ASL.

Besides the structure of institutes for the deaf, the Deaf community also ensured the survival of their language. Though oralisim was the predominant pedagogical philosophy, Galladuet University retained its focus on manual methods of instruction. Furthermore, the National Association for the Deaf (NAD), among its work to promote and protect the rights of deaf individuals, made a concerted effort to record and thereby preserve a record of ASL in the early days of filming technology.

However, oralism remained the predominant pedagogical philosophy in deaf education until major reform in the 70s and 80s. In particular, bimodal/bicultural pedagogical philosophies that emphasize access to ASL alongside instruction in English, became more prominent. This shift does not mean that oralism ceased to exist

[4]See Sager (2019) for more on current attitudes of audiologists and for an excellent overview of the history of deaf education in the United States.

as a pedagogical philosophy, or that the medical model of deafness (opposed to a cultural model of deafness) that has significantly intersected with oralist approaches does not still dictate a number of choices hearing parents with deaf children make when it comes to raising their children. Furthermore, a now more-prominent trend in deaf education is the push towards mainstreaming, a philosophy that gained particular traction in the 1990's. This is where deaf children attend the local public school, but with additional support in place. What this support looks like varies significantly depending on the child's Individualized Education Plan and the school system they attend.

Altogether, it is important to understand that there are several complex factors that impact how different ASL users acquired ASL and what role the use of ASL plays in how they build their identity. These factors also impact attitudes toward English and English use among many ASL users, who may have also acquired English to a large variety of degrees. On this last point, higher fluency in ASL predicts greater attainment of English skills, underscoring the importance of early exposure to an accessible language (Hrastinski & Wilbur 2016).

1.1.2 Key syntactic features of ASL

While ASL has several interesting syntactic features, the most important facts for the current study is that ASL is an SVO, wh-in situ language exhibiting split-headedness and that it does not always require the overt realization of pronouns; furthermore, ASL frequently uses Non-Manual Markers(NMMs) as a means of marking syntactic domains, and is able to take advantage of its modality to track discourse referents. We will proceed to examine each of these features in order.

ASL as an SVO language

Almost always, the first syntactic question when examining a language is what is the basic word order of a simple declarative utterance? Obtaining the answer to that

question, however, is not always as simple as it sounds. Discourse-level considerations can make out-of-the-blue utterances seem quite odd to users of a language, even if the sentence itself is fully grammatical when embedded in the context of a conversation. To consider an example from English, take the sentence in (1.3), which involves the topicalized object, *baseball*.

(1.3) Baseball, I like.

For at least some English speakers, this sentence sounds very odd out of context and they may reject it as ungrammatical. However, embedded in a context, such as the dialogue in (1.4), it becomes markedly better.

(1.4) **Person A:** Do you like golf?

Person B: Golf? No. That's not a sport. Baseball, now, that's a sport. Baseball, I like.

This issue of discourse constraints is important to understand because it has led to claims in the ASL literature, particularly in instructional materials, about the language's basic word order that can easily be misunderstood.

ASL has a basic word order of subject verb object (SVO) (1.5) (Fischer 1974, Liddell 1980, Padden 1988).[5]

(1.5) JOHN BUY COMPUTER YESTERDAY

[6] *'John bought a computer yesterday.'*

However, it is also the case that ASL is extremely sensitive to discourse-level constraints (Shepard-Kegl 1985, Petronio & Lillo-Martin 1997), which can result in signers rejecting out-of-the-blue occurrences of utterances like (1.5), even if they may be perfectly acceptable embedded in context. It is important to be particularly clear on both of these points since they have led to various descriptions of ASL word order, particularly in instructional materials aimed at second-language learners.

[5]The fact that ASL has a basic word order of SVO is not, by itself, particularly remarkable. SVO word order is the second most commonly reported in the WALS database, accounting for 35.44% (n=488) of the 1377 languages surveyed (Dryer 2013).

[6]Example constructed from discussion in Petronio & Lillo-Martin (1997).

One such frequently recurring description in instructional materials about ASL's word-order worth addressing is the claim that ASL is a topic-comment language. Claims of this sort are often accompanied by examples such as (1.6).

(1.6) $\overset{\text{top}}{\overline{\text{VEGETABLES,}}}$ IX-1 LIKE

As in the previously seen example of topicalization in English (1.4), the topic of the sentence, VEGETABLES, comes first and is accompanied by clear visual cues that are required to make the deviation from the underlying word order of Subject Verb Object grammatical. In so far as it goes, this claim is not strictly speaking false, but it is more of a discourse-level characterization than syntactic-level one about the language. It is not that topicalization does not involve the syntax. It is subject to several syntactic restrictions on its formation and occurrence. However, whether a topicalized sentence is required to introduce certain content into a dialogue is governed by discourse-level constraints and "topic-comment" is not really a syntactic basic word order.

The main thing to keep in mind is that ASL is an SVO language that is very sensitive to discourse-level considerations that make judgments on out-of-the-blue utterances tricky to obtain. This is something that we will need to keep in mind both as we discuss the overall design of the current study in Chapter 3, but also as we analyze and discuss the results in Chapters 4, 5, and 6.

Wh-questions in ASL

Now that we have covered the basic word order in ASL, the second syntactic feature of import is how are questions formed in the language? In particular, to what extent does word order vary in content, or 'wh,' questions compared to the declarative? Unlike ASL's basic declarative word order, how to analyze the word order of content questions enjoys less general agreement among prominent sign language linguists, largely because the language has several possible word orders for forming wh-questions.

A fact that does share agreement is that content questions may be formed with the interrogative phrase located in the same position the content phrase would appear in a declarative sentence. For instance, the wh-question form of the previously introduced sentence (1.5) would be (1.7).

(1.7) $\overline{\text{JOHN BUY WHAT YESTERDAY}}^{\text{whq}}$

'What did John buy yesterday?' (Petronio & Lillo-Martin 1997: 26)

In this example, the interrogative phrase WHAT is located in the same location as the content phrase would appear. In other words, ASL content questions can be formed with the wh-phrase *in situ*.

However, this is not the only option available. The wh-phrase may also move, though exactly where it may move to and how to analyze cases involving such wh-movement is the topic of some debate. (See both Petronio & Lillo-Martin 1997 and Neidle et al. 2000 for a thorough overview.) For the time being, we will refrain from reviewing all the data or the main analyses offered to account for it. We will instead simply introduce basic cases where the wh-phrase occurs sentence-final, cases that enjoy general agreement with respect to the data.

Excluding complications from other structure-types available in the language, there are two general cases where the wh-phrase in content questions occurs sentence finally. In the first case, the wh-phrase occurs twice, once at the beginning and once at the end of the construction (1.8).

(1.8) $\overline{\text{WHAT NANCY BUY YESTERDAY WHAT}}^{\text{whq}}$

'What did Nancy buy yesterday?' (Petronio & Lillo-Martin 1997: 27)

In this example we see that the question word WHAT that is used to seek information about the object of NANCY BUY occurs both at the beginning and end of the utterance. Such wh-doubling is subject to certain rules and restrictions that will be discussed further in chapter 3. For the time being, the important point is that WH-doubling provides one option ASL signers may use aside from the in situ strategy and that the option involves some kind of wh-movement.

Another available option involving the wh-phrase being located somewhere other than where the content phrase would appear is for the wh-phrase to simply occur in sentence-final position with no accompanying double (1.9).

(1.9) $\overline{\text{JOHN BUY YESTERDAY WHAT}}^{\text{whq}}$

'What did John buy yesterday?' (Petronio & Lillo-Martin 1997: 37)

It is generally accepted that the wh-phrase in this example is not in situ as counterparts such as (1.10) are ungrammatical.

(1.10) *JOHN BUY YESTERDAY COMPUTER

**'John bought yesterday a computer.'*

Intended:*'John bought a computer yesterday.'*

(Petronio & Lillo-Martin 1997: 37)

As with wh-doubling, the wh-phrase may not indiscriminately occur sentence-final; however, it is generally acceptable for it to do so.

Exactly how to model such occurrences is the topic of some discussion, but unlike some other word order configurations involving wh-questions in ASL, it is generally agreed upon that such occurrences are possible. We will revisit the issue of WH-doubling cases in particular when we discuss the tests employed in this study. For the time being, however, it is sufficient to note that wh-phrases may be formed *in situ* or with the wh-phrase in sentence-final position sometimes with a duplicate wh-phrase co-occuring at the beginning of the utterance.

ASL as a split-headed language

As readers with a background in theoretical linguistics may have already noticed, it is slightly unusual for ASL to have wh-phrases occur sentence finally, particularly given that it is an SVO, and therefore presumably a head-initial language. However, it is largely agreed upon among ASL syntacticians that the head of the Clausal Phrase

(CP) is final. (See, for example, Petronio & Lillo-Martin 1997 and Neidle et al. 2000.)[7] We will revisit this fact when we discuss specific tests meant to answer the research questions of the current study, but for the time being, it is sufficient to simply be aware of this less common syntactic feature of the language. For readers who may be less familiar with these concepts, the remainder of this subsection provides a simplified primer on the terms head-initial and head-final.[8] Those readers with a background in theoretical linguistics, particularly in minimalist syntax traditions, are encouraged to skip ahead at this point.

Under most current minimalist program models of syntax (and under older X-bar theories as well), it is given that sentences, such as (1.11), are recursively composed of phrases.

(1.11) The cat sat on the couch.

In general, phrases can be given as a well-formed response to a question, though there are other tests for identifying them as well. For instance, in (1.11), *on the couch* can be shown to be a phrase because it is an acceptable answer to the question *Where did the cat sit?*.

Each phrase has a head, which is the part of the phrase that determines what properties the phrase as a whole possesses. Going back to (1.11), the head of *on the couch* is the preposition *on*, making the whole a prepositional phrase. This is because the preposition determines the overall properties of the phrase. For instance, the ability of the phrase to occur where it does in the sentence can be shown to result from the preposition rather than the phrase *the couch* as the phrase *the couch* is ungrammatical in the construction without the accompanying preposition *on* (1.12).

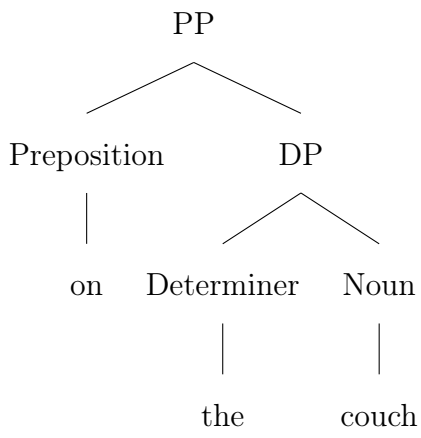
(1.12) *The cat sat the couch.

These phrase structures are modeled using trees, and these trees may be no more than binary branching.

[7]Related to the different observations regarding wh-questions, the question of whether the specifier of the CP is left or right branching, however, is a topic of some debate that the two referenced works disagree on.

[8]For a more thorough accounting, I would direct the reader to Radford (2004)

(1.13)



Because the head *on* comes at the beginning of the phrase, we say it is head-initial. In languages that have postpositions rather than prepositions, that is where the positional marker comes at the end of the phrase, we would say it is head-final instead.

Some languages have split-headedness, meaning that some types of phrases are head-initial while others are head-final. As mentioned at the beginning of this section, this is the case in ASL. Most phrases are head-initial, but the Complementary or Clausal Phrase, which is the highest level phrase, is head-final.

ASL as a pro-drop language

Another important syntactic feature of ASL is that the expression of pronominal arguments is frequently optional; it is a pro-drop language (Shepard-Kegl 1985, Lillo-Martin 1986). This means that, at least for some classes of verbs, it is possible to omit any signs that overtly specify the subject of the sentence.

Some languages, like English, require that pronominal arguments always be specified. That is to say, for the full sentence (1.14), (1.15) is an acceptable alternative, but (1.16) is not.

(1.14) Jane enjoys the sun.

(1.15) They enjoy the sun.[9]

[9]Following a usage dating back to Middle English and common in contemporary English, "they" is used throughout as a gender-neutral third person singular pronoun. (See LaScotte 2016 and therein for more on historical and contemporary usage.)

(1.16) *Enjoy(s) the sun.

The key difference between (1.15) and (1.16) is that the former has the pronoun *They* to serve as the subject of the sentence whereas the latter does not.

ASL, however, does not have the same restriction. It is possible in several cases to omit the pronominal argument (1.17).

(1.17) $_a$JOHN $_a$FLY$_b$ $_b$CALIFORNIA LAST-WEEK. ENJOY SUNBATHE[DUR]. [10]
'John flew to California last week. (He's) enjoying a lot of sunbathing.'
(Lillo-Martin 1986: 421)

Unlike in the previous examples involving English, it is possible to omit the pronoun in the utterance ENJOY SUNBATHE[DUR]. The fact that ASL is a pro-drop language will become particularly important to the question of how, exactly, the constructions under investigation are constructed, particularly with respect to where clausal boundaries are located, an issue we will return to in Chapter 3.

Syntactic constraints of NMMs in ASL

Another important feature of ASL, and of signed languages more generally, is the presence and use of Non-Manual Markers (NMMs). As the name indicates, these are markers that are not formed by the hands. They may involve movement of articulators on the face, such as raised eyebrows or pursed lips, or they may involve the relative position of the torso and/or shoulders, such as a body lean, or may involve a bundle of such movements produced simultaneously. NMMs should not be confused with affective facial expressions or general body language. NMMs are required for the utterance to be grammatical with the meaning intended. The location and extent of NMMs is sensitive to syntactic constraints.

An example of an NMM that will be of particular importance to us for the current study is that associated with wh-questions in ASL, frequently annotated in the

[10]Here and throughout, subscripts are used to indicate agreement, typically indicated through the use of space.

literature as 'wh' or 'whq.' In this case, 'whq' is actually a set of NMMs comprised of furrowed brows and squinted eyes and accompanied by a movement of the head (Baker-Shenk & Cokely 1980). This set of NMMs occurs over the entire wh-clause, as indicated by the duration of the overbar (1.18).[11]

(1.18) $\overline{\text{WHAT NANCY BUY YESTERDAY WHAT}}^{\text{whq}}$

'What did Nancy buy yesterday?' (Petronio & Lillo-Martin 1997: 27)

This spread is governed by syntactic structure, in this case the location of clausal boundaries.[12] Because the location of NMMs is predictable, their presence and location is frequently important in developing an understanding of the syntactic structure of other constructions.

ASL as a spatial language

The last feature of ASL that we will discuss before examining various ways ASL has been observed to express comparison is a representative way in which the language makes use of space. One important way ASL, and signed languages more generally, take advantage of their visual-gestural modality is by establishing referents in space. This is done by establishing *loci* in particular places, frequently using an indexical point. Once a referent has been assigned a locus, that locus can then be used later in the conversation to recall the referent that was established there. A sub-class of verbs referred to as agreeing verbs provides an example of this phenomena. With this class of verbs, interpretation of subject and object depend on the direction of movement used. Provided loci have been established, then the starting point is interpreted as the subject while the ending point of the movement is interpreted as the object. For example, the agreeing verb GIVE is signed two different ways in Figure 1.3 and in

[11] In cases where the wh-word is singular and final, the 'whq' NMMs may occur over only the wh-word; however, there is disagreement as to how to analyze such cases (Petronio & Lillo-Martin 1997, Neidle et al. 2000)

[12] Other NMMs have slightly different spreading restrictions and degrees of optionality.

Figure 1.4. The former represents the utterance in (1.19) while the latter represents the utterance in (1.20).

(1.19) $_i$GIVE$_j$

'I gave (it to) them.'

(1.20) $_j$GIVE$_i$

'They gave (it to) me.'

The only difference is the direction of movement. The two previously established points in space–the signer's body, which indicates the signer and is represented here by the subscript *i*, and a point to the signer's right, which would have had a particular entity associated with it earlier in the discourse and is represented here by the subscript *j*–remain the same. It is the manipulation of space, in this case the direction in movement, that creates the grammatical contrast that gives rise to the two interpretations. What is important to understand and remember about all of this is that ASL is a spatial language. It frequently manipulates space in a systematic manner to create or convey grammatical distinctions.

Figure 1.3.: Agreeing verb GIVE: *'I gave them.'*
(Used by permission of Dr. Bill Vicars)

Figure 1.4.: Agreeing verb GIVE: *'They gave me.'*
(Used by permission of Dr. Bill Vicars)

1.2 Expressing comparison in ASL

Let's now return to the current question at hand, which concerns the expression of comparisons of superiority in ASL. As mentioned at the beginning, ASL has multiple ways to express comparisons of superiority and it is important to note that there is not any agreement in the literature as to what the "canonical" comparison of superiority in ASL is. There are, however, at least five different ways canonical English comparatives of superiority show up in ASL translations or vice versa that were found in the initial review of the literature and previously collected data leading up to the development of the current study. These various forms are discussed in the linguistics literature to varying extents, but little linguistic work has been done on any of them, save the BEAT-construction. I will briefly describe each of these constructions, referring to them as the contrastive construction, the by-degrees construction, the WORSE-construction, and the previously introduced MORE- and BEAT-constructions, respectively. We will then be able to move on to outlining the aims of the current study with regard to the latter two constructions in more detail.

I wish to further clarify that the list of candidate comparative constructions detailed here is not meant to be exhaustive or to indicate that the constructions presented should all definitely be classified as comparisons of superiority. They are merely forms that have been observed as translations of or constructions that get translated into English as canonical comparisons of superiority. This list does, however, give

us the details we need to take appropriate cautions in interpreting the results of this study against a larger typological framework and to provide important context for understanding the scope of the current study on comparisons of superiority in ASL.

It should be further noted that the decision to focus on the MORE- and BEAT- constructions does not constitute a claim about the relative status of either construction with respect to signer preferences. The study makes no claims about what the default or most commonly used comparison of superiority in ASL is. This study simply does not address the issue, instead focusing on the much narrower question of how two particular constructions reported to express comparisons of superiority differ from one another in their syntax and semantics.

With all of that now having been said, let us move on to see a brief description and example of each candidate comparison of superiority in ASL and to note the extent to which it appears to have been mentioned in the literature.

1.2.1 Comparison via the Contrastive Construction in ASL

The first comparison construction we will review is the contrastive construction (1.21). The distinguishing feature of this construction is its extensive use of space. In order to form the construction, a signer first establishes a fact about someone on one side of the signing space and then establishes a relevantly similar fact about someone else on the other side of their signing space. For instance, in (1.21), the signer would first indicate that person A is TALL, most likely taking care to establish this sign on their left side and with some shoulder and/or torso shift to that side, and would then indicate that person B is SHORT on their right side, again with some accompanying shoulder and/or torso shift.

(1.21) ASL Contrastive Construction

IX-3_i TALL IX-3_j SHORT

'S/he's tall. S/he's short.'

It is important to note that the use of this construction is not limited to cases involving properties like TALL and SHORT. It can also be used to contrast where people live, what type of work they do, or what they look like, for instance. It is furthermore not limited to only two utterances, one per person. As mentioned in §1.1.2, space is often used to keep track of referents across discourse. The contrastive structure takes advantage of this fact and can continue to contrast multiple aspects of different entities by continuing to use the space previously assigned to them. In other words, this construction appears to function discursively and not merely sententially.

This construction shows up in ASL textbooks, like the *Signing Naturally* series, under titles such as "Contrastive Structures." It is also alluded to briefly in Bobaljik's (2012) survey of the comparative morphology of languages based on personal communication with Diane Lillo-Martin. Otherwise, it does not seem to have received any linguistic treatment or analysis, so nothing more can be said at this time about its syntax or semantics.

1.2.2 Comparison via the By-Degrees Construction in ASL

Unlike the contrastive construction, the by-degrees construction involves comparison of the same entity against itself over a period of time (1.22). The distinguishing feature of this construction is the way that the sign used to describe the entity is produced. Instead of producing this sign with a singular, fluid movement, the signer punctuates the movement, often with rapid deceleration, to produce clear points along the way. That is, there are submovements added into the movement you would see in a citation or dictionary version of the sign.

(1.22) ASL By-degrees Construction

CL:V_*out*_*to*_*a*_*point*(++)[13]

'(becoming) taller and taller'

[13]Example from "A tall Douglas tale" by Peter Cook, voiced by Keith Wann, published on Keith Wann's YouTube channel (https://youtu.be/RSRUqbPjiQ8)

The example above comes from a story by Deaf artist Peter Cook and relies on the voiced over translation of Keith Wann, who is a Child of Deaf Adults. As can be seen in the video that accompanies (1.22), the signer's dominant hand uses the V-handshape to depict legs of a previously mentioned character in the story. This V-handshape starts off close to the ground, but then successively moves up and away from this starting point, stopping at discernible points along the way. These points along the way are important for receiving this interpretation. Otherwise, it would better be understood simply as *grew* or *enlarged*.

Observations of this by-degrees construction were noted in Kentner (2014: 62) and in Loos (2016: 113), though neither of them referred to the construction by this name. Both found at least one case of the by-degrees construction existing inside of what are referred to as resultative constructions, of which an English example is given in (1.23).

(1.23) English resultative construction

Mary hammered the metal flat.

Resultative constructions involve the overt specification of both an action (*hammer*) on an affected object (*the metal*) and the new state of that object (*flat*) as a result of the action. The by-degrees construction was sometimes observed in ASL with the predicate that indicated the change-of and resultant state of the object, overtly indicating that the change of state was gradual rather than sudden. To date, however the by-degrees construction does not appear to have received any linguistic treatment, so very little aside from these observations is known about the construction's syntax or semantics.

1.2.3 Comparison via the WORSE-Construction in ASL

The WORSE-construction (1.24) also seems to compare a single entity against itself over time. The distinguishing feature of this construction is the use of a sign glossed

Figure 1.5.: ASL WORSE
(Used by permission of Dr. Bill Vicars)

as WORSE. This sign is a two-handed sign produced with a K-handshape and a pivot at the elbow joints, as can be seen in Figure 1.5.

(1.24) Exceed-type in ASL: WORSE

WORSE BEAUTIFUL

'(S/he) is more beautiful (than before).'

Care needs to be taken to not let the standard glossing mislead us. In (1.24), the interpretation is not that the person under discussion is *less beautiful* than before or than another person, rather the assertion is that this person is now *more beautiful (than they were before)*.

The WORSE form is mentioned in the ASL instructional materials of Vicars (2012), who notes that the sign glossed as WORSE in ASL is actually based on the sign MULTIPLY and that the distinguishing feature between the two is the accompanying facial expression. He further notes that the sign can be further modified by producing it with a double, smaller movement to mean FIGURE-OUT. The sign WORSE has also been identified in personal communications with Ronnie Wilbur from Sandra Wood as being used in limited circumstances to create comparisons of superiority and as being limited to comparison of an individual over time.

Now that we have looked at the contrastive construction, the by-degree construction, and the WORSE-construction, we can turn our attention back to the constructions central to the current inquiry, namely the MORE- and BEAT-constructions. We will take a slightly closer look at what is known as well as what is unknown about each of these constructions before finally outlining the research questions of the present study.

1.2.4 Comparison via the MORE-Construction in ASL

Let us start with the MORE-construction (1.25), which has a few distinguishing feature: the presence of an analytical and synthetic form, the presence of THAN, and the existence of what is likely a shortened version of the construction. Once we have reviewed each of these distinguishing characteristics, we will take a look at what has been said in the literature about this construction before moving on to examine the BEAT-construction.

(1.25) ASL MORE-construction

F-I-D-O IX3 MORE WET THAN PRINCESS

'*Fido is more wet (wetter) than Princess.*'

The first distinguishing feature of the MORE- construction is that it actually has two forms: one analytical and one synthetic. This means that there is a functional morpheme–MORE in this case–with one form that can stand by itself as an individual word and another form that must be attached to another word and cannot stand alone.

In the analytical form, the functional morpheme MORE is produced by bringing both hands together at the fingertips, the thumb of each hand touching the forefingers, which are flexed at the the first knuckle joints. This is illustrated in Figure 1.6.

In the synthetic form, the morpheme .UP takes the form of a thumbs-up at approximately shoulder-height and is incorporated into the movement of the sign. This can be seen by comparing Figure 1.7a, which shows how GOOD is signed on its own,

Figure 1.6.: ASL MORE
(Used by permission of Dr. Bill Vicars)

with Figure 1.7b, which illustrates how the sign GOOD.UP is formed with the synthetic morpheme. Whether the analytical or the synthetic form of the MORE-construction

(a) GOOD

(b) GOOD.MORE_*thumb-up*

Figure 1.7.: Synthetic affix counterpart to analytical MORE in ASL particle-type comparative

(Used by permission of Dr. Bill Vicars)

is used appears to depend on the lexical item used and does not appear to alter the overall meaning of the utterance. For example, the signs OLD and GOOD seem to require the use of the synthetic form and prohibit the use of the analytic one. This is to say that the two forms of the MORE-construction are just variations of one another and not two completely separate constructions.

Another distinguishing characteristic that both the analytical and synthetic form of the MORE-construction share is the presence of the lexical item THAN, depicted in Figure 1.8. As can be seen, this sign is produced with both hands in a flat-B handshape, palms facing downward with the non-dominant hand remaining stationary at about elbow-height and the dominant hand moving in a downward, linear fashion so

Figure 1.8.: ASL particle THAN
(Used by permission of Dr. Bill Vicars)

as to make contact with the non-dominant hand. This sign, when present, introduces the entity that possesses less of the property under discussion.

The last distinguishing feature of the MORE-construction is that a shorter form seems to exist (1.26).

(1.26) ASL MORE-construction: Short form

CHICKEN MORE HAPPY [14]

'The chickens were happier.'

This version is the same as the longer version with respect to its use of the analytical and synthetic forms of MORE; however, unlike the longer version, it does not use THAN or overtly specify the entity used as the point of comparison. In the context of the story from which the above example is taken, it is clear that the chickens are happier than they were before a given event took place, but this is not stated overtly. Whether the ability to leave off the THAN-phrase has to do with the relative semantics of THAN and MORE or whether the THAN-phrase is simply elided on the surface but still underlyingly present is not clear at this point in time.

There is more documentation of this construction in the literature than the previous constructions we have examined; however, like the previous constructions, it still has not received any direct linguistic treatment. Like the contrastive construction, the MORE-construction can be found in at least some ASL textbooks, particularly in *Vista Signing Naturally: Level 3*, where it is explicitly referred to as a comparative. Also like the contrastive construction, the MORE-CONSTRUCTION makes an appearance in Bobaljik's (2012) survey of comparative morphology. Bobaljik (2012) focuses on the semantics of morphemes like MORE cross-linguistically; however, no specific claims about the syntax and semantics of this construction as it appears in ASL are explicitly made. Wilbur et al. (2018) provide some empirical examples concerning the MORE-construction's syntax and semantics, but this is in service to analyzing the BEAT-construction rather than in providing an analysis of the MORE-

[14]Example from *Otis* by Loren Long, translated into ASL by Keith Wann, published on ITV Signed Stories Youtube Channel (https://youtu.be/p6Fjuz3NwUA)

construction itself. We will take a closer look at those empirical examples in more detail as we review the tests used in this study. For now, it suffices to say that while the MORE-construction has been discussed and documented explicitly as a comparative construction and while it is better described than the contrastive, by-degrees, or WORSE-construction, we still know relatively little about it.

1.2.5 Comparison via the BEAT-Construction in ASL

The last construction we will review before detailing the aims of the current study is the BEAT-construction (1.27). Unlike the previously described constructions, some specific claims about the syntax and semantics of the BEAT-construction have been made. As with the other constructions discussed in this section, we will quickly review the BEAT-construction's distinguishing characteristics before previewing the claims that have been made about the construction in the linguistics literature.

(1.27) ASL BEAT-construction

IX-3 MOUNTAIN TALL-1 BEAT ALL PLANET[15]

'That mountain is taller than any in the solar system.'

The main distinguishing feature of the BEAT-construction is the presence of a sign glossed as BEAT; this sign is produced by changing handshapes from S to H, as can be seen in Figure 1.9. As BEAT is an agreeing verb, the direction of movement made

[15]Example from "Douglas the Space Boy" by Peter Cook, voiced by Keith Wann, published on Keith Wann's YouTube channel (https://youtu.be/HhERMLRExbM)

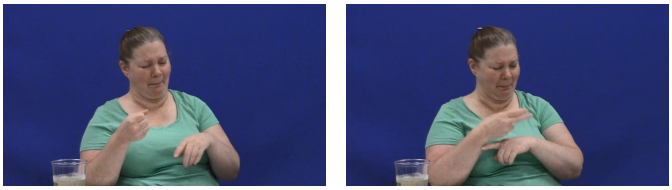


Figure 1.9.: ASL BEAT

when signing it is frequently important for interpretation. In general, its starting location indicates the entity that possesses more of the property in question and its ending position indicates the entity that possesses less of the property in question.

Of the constructions used to express comparison in ASL that we have looked at, the BEAT-construction has been the most systematically studied. Wilbur et al. (2018) effectively argue that the BEAT-construction is an exceed-strategy, explicit comparative. What this means and what evidence they present is an argument we will take up in the next chapter. For now, it suffices to note that they make specific claims about the linguistic structure of the construction.

They furthermore note some as-of-yet-unexplained restrictions in its distribution. The main example of the unexplained distributional restrictions given by Wilbur et al. (2018) is that it seems to be incompatible with at least some properties, such as NICE (1.28).

(1.28) $*_{i}$MARY NICE $_{(i)}$BEAT$_{j}$ $_{j}$EVA (Wilbur et al. 2018)

Exactly why it shows such restrictions is less clear.[16] This particular point will not be a major focus of the current study, but is mentioned for the sake of thoroughness.

1.3 Research questions

Now that we have established some basic facts about the language under consideration and have taken a brief survey of the types of comparisons the language has on offer, we can turn our attention to outlining in more detail the objectives of the current study on the MORE- and BEAT-constructions in ASL. As can be seen from the review provided above, the list of what is known about either construction is limited, though a bit more is known about the BEAT-construction than about the MORE-construction. Due to the paucity of data, the primary aim of this study is to collect a basic set of empirical facts necessary for developing a syntactic and semantic

[16]Though Wilbur et al. (2018) speculate that the restriction in this particular example might result from NICE being an evaluative predicate, they also have examples involving BEAUTIFUL, which seems likely to be an evaluative predicate.

account of the MORE- and BEAT-constructions in ASL within a minimalist syntax and formal semantics framework. To that end, this project has the following three research questions:

1. Where are the construction's clausal boundaries and what is the construction's basic constituency structure?

2. Is there evidence that degree(s) are involved in the construction's derivation? (And if so at what point(s)?)

3. Following closely from the previous, how are the standards of comparison composed?

The first question involves determining what the basic syntactic building blocks of each construction are and roughly how they fit together. In particular, it will be necessary to test how many clauses each construction contains and should the construction contain more than one clause, whether any of those clauses are independent or embedded. It will also be necessary to determine, to the extent possible, how many syntactic phrases each construction is comprised of and what the syntactic categories of those phrases are.

The second research question is concerned about whether there is any reason to believe that either construction makes use of degree phrases. For now, it will do to think of degree phrases as syntax-semantic units that specify the extent to which an entity possesses a property in question. Measure phrases, such as *two inches*, are frequently seen as prototypical degree phrases. There is reason to believe that some constructions that result in comparison require the introduction of an explicit degree argument that serves as the standard for comparison while others do not. These are referred to as explicit and implicit comparisons, respectively (Kennedy 2007).

The third research question expands on the answers to the first two and prompts us to map out in more detail how the standard of comparison is put together. In particular, we will want to know what restrictions exist on the syntactic category of

the standard of comparison. For instance, is it possible for it to be a clause? Even more particularly, we will also be checking for evidence of a covert operator in the standard of comparison. This will help us further map out the underlying structure of each construction.

For each of the research questions outlined above, there is an associated series of tests designed to help us develop a working syntactic-semantic analysis for each construction. Prior to outlining the various tests we will use to answer each question and detailing more precisely the methods for administering those tests, however, we will first review a basic degree semantics approach and take a quick survey of different typological observations that have been made with respect to comparative constructions. This will help to provide an introduction to the theoretical apparati used as the framework for the current study. It will also provide us with our initial analyses. Once we have reviewed this literature and outlined the tests and methods of the current study, we will examine the results of the various tests for the MORE-construction and then look at the results of the various tests for the BEAT-construction.

By the time we finish reviewing the evidence, we shall see that an analysis of the MORE-construction as a comparison of degrees and of the BEAT-construction as a comparison of individuals is able to account for the data. Furthermore, we will see how this exploration contributes to our understanding of approaches to the typology of comparisons, particularly showing the need for more cross-linguistic work that examines multiple comparison types from each language rather than focusing on a singular comparison construction from each.

2. COMPARATIVES & DEGREE SEMANTICS

Now that we have taken a look at comparison constructions in ASL and outlined the research questions of this study in more detail, let's broaden our gaze to look at comparison constructions cross-linguistically before turning our attention to the methods of the current investigation. We will begin by reviewing the surface forms of the various strategies for forming comparisons that have been observed cross-linguistically before exploring the theoretical semantic framework that has been developed for modeling gradable properties and comparative constructions and looking at the differences associated with various forms of comparisons in more detail. We will then conclude the chapter with an initial set of proposed analyses for modeling the syntax and semantics of the MORE- and BEAT-constructions in ASL.

2.1 Description of comparative forms cross-linguistically

Given that comparatives have been under-studied in ASL, it is a good idea to acquaint ourselves with the variety of structures languages use to create comparisons of superiority.[1] Under the typology of Stassen (1985, 2013), languages are classified by their preferred strategy for introducing a standard of comparison–in English, the *than*-phrase. Stassen (1985, 2013) identifies four distinct strategies for forming comparisons based on this criteria.[2] They are as follows:

[1]Hereon out I will use "comparisons of superiority" and "comparisons" as largely synonymous terms. However, it should be noted that "comparisons" is sometimes used in the literature as an umbrella term to cover comparisons of superiority as well as other types of comparisons such as comparisons of inferiority (*Elizabeth danced less than Jane*, equatives (*Jane danced as much as Elizabeth*), and excessives (*Jane danced too much*).

[2]He further groups them into two larger categories based on case assignment, but as this distinction does not play a major role in our current line of inquiry, we will set it to the side. Additionally, he uses the term "type" rather than "strategy," but I follow Beck et al. (2009) in preferring the term "strategy." This serves as a means of avoiding confusion later on when using the word "type" in its formal semantic sense.

- Locational
- Particle
- Exceed
- Conjoined

Before examining an example of each strategy, there are two things that should be mentioned here and kept in mind throughout. The first thing is that English canonical comparatives of superiority (2.1) are cross-linguistically rather odd.

(2.1) Canonical English comparative of superiority
Jane is taller than Elizabeth.

To begin with, though English has both comparative morphology (*more/-er*) and a standard marker (*than*), the vast majority of languages do not (Ultan 1972, Stassen 1985, 2013). Most have only the standard marker.[3] Additionally, most languages in the World Atlas of Language Structures are considered locational or exceed comparatives (Stassen 2013) rather than particle. In other words, statistically speaking, we actually do not expect to find a comparative construction that appears superficially like English canonical comparatives in any randomly selected language.

The other thing that should be kept in mind throughout is that labelling a language as having a particular comparison strategy does not preclude the possibility that the language makes use of other comparison strategies.[4] English, for example, though considered a particle-strategy language when it comes to comparisons has a construction apart from the than-comparative that allows for implicit comparisons (2.2) (Kennedy 2007, 2011).

(2.2) Implicit comparison in English
Compared to John, Phil is short.

Furthermore, these different strategies for creating comparisons in the language may be analyzed as having different semantics (Kennedy 2007). (See also Lam 2015 for a

[3]For cross-linguistic work that focuses on the comparative predicate morphology—what is expressed as "more" and "-er" in English—see Bobaljik (2012).
[4]This is in much the same fashion as that in Talmy's (1975, 2000) classic motion-event typology, labelling a language as preferring a certain event type does not mean the language cannot compose events using other structures.

discussion on different strategies for forming comparative constructions and attendant restrictions in Mandarin.)

With those thoughts in mind, let us take a look at the variety of structures commonly associated with comparisons of superiority in various languages.

2.1.1 Locational comparatives

The first comparison strategy is the locational, which uses a functional morpheme related to location, such as *from, to,* or *at* to introduce the standard of comparison. In (2.3), we see an example from Mundari where a *horse* and an *elephant* are being compared with respect to their size. The standard of comparison, *horse*, is introduced with the locational morpheme *-ete*, *from*.

(2.3) Mundari locational-strategy comparative

sadom-ete	*hati*	*maranga-e*
horse-from	elephant	big-3SG.PRES

'The elephant is bigger than the horse.'

(Hoffman 1903: p. 110 via Stassen 2013)

In Stassen's (2013) survey, locational comparatives are the most commonly found, accounting for 78 of the 167 (45.7%) languages represented.

2.1.2 Exceed comparatives

The second strategy for forming comparisons, the exceed-strategy, utilizes a transitive verb with a meaning related to *exceed* or *surpass* to introduce the standard of comparison, which behaves as a direct object. In the example from Duala (2.4), we see the verb *buka/exceed* used to introduce the standard of comparison, a demonstrative picking out a house. This demonstrative, *nine*, behaves as the direct object to the verb.

(2.4) Duala exceed-strategy comparison

nin ndabo e kolo buka nine
this house it big exceed that
'This house is bigger than that.' (Ittmann 1939: p. 187 via Stassen 2013)

Of the 89 languages in Stassen (2013) that were not locational-strategy comparatives, 33 (37.1%) used the exceed strategy, accounting for 19.8% of all 167 languages surveyed.

2.1.3 Particle comparatives

The third strategy for forming comparatives is the particle-strategy, which is the form the canonical English comparative takes. In (2.5), we have an example from French. Just as in English, the standard of comparison is introduced with a particle, *que* in this case. Note that French, like English but unlike Mundari and Duala, also further modifies the predicate with the comparative marker *plus*/*more*, a phenomena most commonly found among particle-strategy and European languages (Stassen 2013). However, this comparative marker is not a necessary feature of the particle-strategy comparative.

(2.5) French particle-strategy comparison

tu es plus jolie que ta sœur
you are more pretty than your sister
'You are prettier than your sister.'

(Bernard Bichakjian, p.c. via Stassen 2013)

Overall, the particle-type comparatives are cross-linguistically the least common, accounting for only 22 of the 167 languages surveyed, or 13.2% of all languages and 24.7% of the non-locational languages (Stassen 2013).

2.1.4 Conjoined comparatives

The last type of comparative is the conjoined-type comparative. Unlike the other types where the standard of comparison is introduced in the same main clause,

conjoined-type comparatives typically use two independent clauses. There are two main strategies these types of comparatives can employ: antonymy or negation.

In some cases, the strategy is to assert that a predicate applies to a particular entity and then to assert that the antonym of the predicate applies to the standard of comparison.[5] For instance Amele utilizes this strategy, shown in (2.6). The predicate *big* is applied to the first *house* and the antonym *small* is applied to the second *house* that is serving as the standard of comparison.

(2.6) Amele conjoined-strategy comparison

jo	*i*	*ben*	*jo*	*eu*	*nag*
house	this	big	house	that	small

'This house is bigger than that house.' (Roberts 1987: p. 135 via 2013)

The second strategy is to assert the application of the predicate holds for the comparee but to deny the predicate holds for the standard of comparison. This is the strategy employed in Menomini, shown in (2.7). Here, the comparee is asserted to be *strong*, while the standard of comparison, *I*, is asserted to be *not(-strong)*.

(2.7) Menomini conjoined-strategy comparison

Tata'hkes-ew	*nenah*	*the*	*kan*
strong-3SG	I	and	not

'He is stronger than me.' (Bloomfield 1962: p. 506 via Stassen 2013)

Considering both sub-types together, conjoined comparatives occur about as frequently as exceed-strategy comparatives, accounting for 34 of the 167 (20.4%) languages surveyed in Stassen (2013), or 38.2% of non-locational (89) comparatives.

2.1.5 ASL comparison constructions and cross-linguistic strategies

As discussed in the last chapter, it is not clear at this time what ASL's preferred construction for comparison is. However, it is worth noting that of the constructions

[5]In conjoined-strategy comparatives, it is not entirely clear to me how to determine which entity is the 'comparee' and which the 'standard of comparison.' In these examples, I consistently use 'standard of comparison' to refer to the entity introduced in the second clause as this seems in line with how Stassen (2013) uses the terms for conjoined-strategy comparatives.

identified in Chapter 1 as being used for forming comparisons in ASL, three have a surface structure that resembles the different strategies just introduced. The BEAT-construction has been successfully argued to be an *exceed*-strategy comparative by Wilbur et al. (2018), while the MORE-construction looks a great deal like a *particle*-strategy construction, and the contrastive construction looks, at least superficially, like a *conjoined*-strategy comparative.

2.2 Semantics of degrees and comparisons cross-linguistically

As mentioned in §1.3, this study will approach the current research questions about the ASL BEAT- and MORE- from a minimalist syntax and formal semantics framework. Some basic assumptions that inform how the minimalist syntax framework models structures were presented in §1.1.2 when discussing the split-headed nature of ASL. Here, I will introduce the relevant aspects of the formal semantics framework that will inform our current investigation and what assumptions will be made about how this framework interacts with the syntax. This particular semantics tradition follows the Fregean program as it was developed by Lewis, Montague, and Creswell and subsequent theoreticians.[6] With this theoretical framework in hand, we will then revisit the different comparison strategies introduced in the previous section with the goal of forming an initial hypothesis for the ASL MORE- and BEAT-constructions.

2.2.1 Semantics of degrees

For a formal semantic representation of comparatives, this study will assume a degree-based analysis of gradable predicates within the tradition of, among others, Cresswell 1977, Stechow 1984, Heim 1985. While there are other traditions for handling gradable predicates that do not rely on the concept of degrees, assuming their existence provides an expedient way of engaging with the current literature and for-

[6]For a detailed introduction to this formal semantics tradition, the reader is referred to Heim & Kratzer (1998).

mulating potential differences between the two constructions.[7] A further set of assumptions concerning the relationship between the semantics and the syntax is made throughout, namely that they fit together in some kind of (de)compositional manner, and that operations in the semantics requiring the manipulation of variable need a way to access them through the syntax.

Under a degree-based account of gradable properties, degrees (d) are taken as a primitive type in the ontology and gradable predicates, such as *tall*, relate individuals (e) to degrees. These degrees are sets of values that can be ordered along some dimension, such as *height*.[8] These degrees ordered along a dimension form a representation of measurement, or scale. These scales can be composed in different ways, which results in distinct classes of gradable properties with observable differences in their behavior. For example, compatibility with modifiers such as *100%* is argued to result from whether the scale's composition includes the boundaries of the scale in the set of degrees (Kennedy & McNally 2005). Furthermore, some gradable properties have complex scales that are composed of multiple dimensions. For example, *healthy* in English arguably contains the dimensions of blood pressure, heart rate, and the ability to exert oneself over a given period of time, among other dimensions, as can be demonstrated by the predicate's ability to be modified by *with-respect-to*-phrases. (See, among others, Sassoon 2010.) We will continue to use the somewhat simpler case of *tall* for the purposes of exposition, but it is important to understand that gradable properties have a wide range of sub-classes associated with different behaviors and distributional patterns and that the behavioral properties of those subclasses may cause them to interact with a comparative construction in various ways.

Altogether, a gradable predicate, such as *tall*, is given a denotation along the lines of (2.8).

[7]For a thorough discussion of the various major approaches to representing gradable predicates and how they differ from one another, the reader is referred to Morzycki (2015).
[8]See Kennedy (2001) and Schwarzchild & Wilkinson (2002) for why degrees should be conceptualized as extents and not as points.

(2.8) Example denotation for a gradable property[9]

$[\![tall]\!] = \lambda d \lambda x.\mathbf{tall}(x) \succeq d$ (Kennedy 2007)

In this representation, the predicate (*tall*) is denoted by the function for the degree (d) and individual (x) such that when the property *tall* is applied to the individual, the individual is at least that property to the specified degree.

Note that the denotation for *tall* does not supply the degree itself. The denotation for the gradable property only relates the degree to the individual. And without a degree, we cannot assess whether *tall* applied to a specific individual should be evaluated as TRUE or FALSE. Therefore, intermediary functional degree morphology is required to supply the degree. In simple assertions involving gradable properties, what is referred to as the positive form (2.9), this is achieved with a null *pos* morpheme which provides a contextually-determined standard for comparison that the degree of the individual must exceed (or at least meet) if it is to be truthfully ascribed with that gradable property, as *tall*, in that context. This *pos* morpheme is frequently given a denotation along the lines of (2.10).

(2.9) Example English positive form

Jane is tall.

(2.10) Example denotation of functional degree morpheme, *pos*

$[\![pos]\!] = \lambda g \in D_{<d,et>} \lambda x.max\{d \mid g(d)(x) = 1\} \succeq \mathbf{stnd}(g)$ (Kennedy 2007)

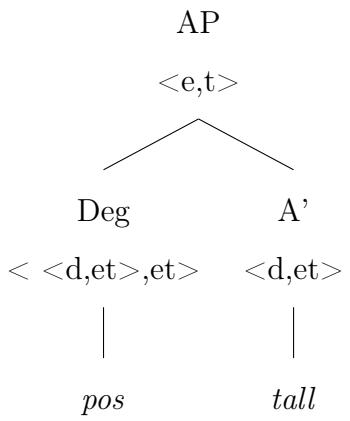
In this denotation, the *pos* morpheme takes an individual (x) and a gradable predicate (g), which belongs to the set of functions that have type <d, et>–that is the set of functions that take degrees and relate them to individuals. Then a maximality operator ensures that the maximum degree for the individual is compared to the output of a function that calculates the contextually-appropriate standard (**stnd**) for

[9]Throughout, I present formal denotations as close to how they appear in the cited work as I can replicate. This leads to some inconsistencies in formal style throughout the document, but reduces the chances of inconsistencies or misrepresentation of the original texts. As I will largely be evaluating the fit of previously given denotations rather than putting forward new ones, risking inconsistencies throughout the text was judged to be the lesser of the two evils.

that gradable property (g). One reason for this maximality operator is to rule out things like using the degree of 5 feet when evaluating whether someone who is 6 feet in height counts as tall even though, technically speaking, they also reach the extent of 5 feet.[10]

Concerning how to put the the gradable property and the positive morpheme together in the syntax, there are two main strategies. In one tradition (largely following Bresnan 1973) the functional degree morphology is located in the specifier of the adjective phrase, and in the other tradition (largely following Abney 1987) the degree phrase instead takes the adjective phrase as its complement. For the sake of exposition, we will follow the former rather than the latter. This results in a syntactic analysis along the lines of (2.11).

(2.11) Syntactic representation of degree morphology

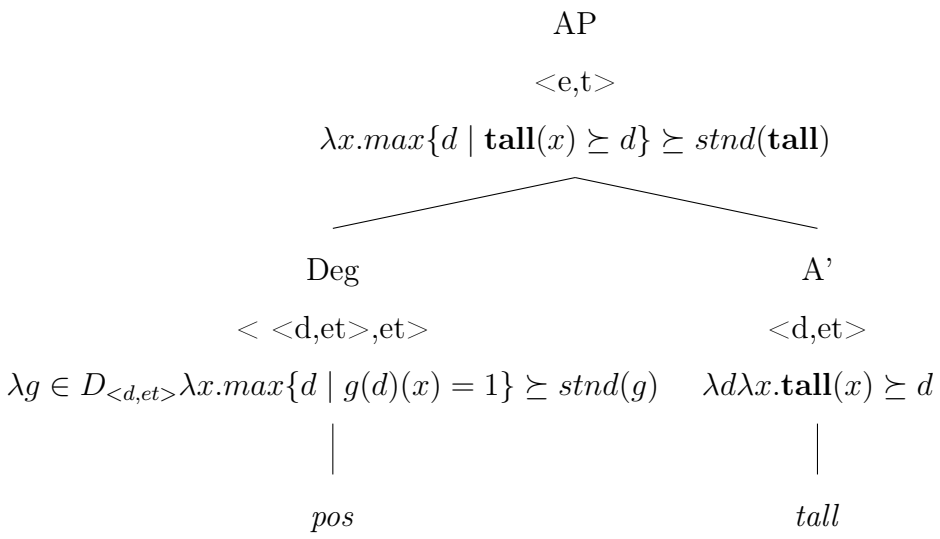


The adjective, *tall* (<d,et>), which relates degrees (d) to individuals (e) (assessed for truth values (t)) (et), combines with the degree morpheme, *pos*, which takes the gradable properties (<d,et>) and results in a function for relating individuals to truth values (et). When the degree and the adjective combine, we then have an Adjective Phrase (AP) that can take the individual (e) and evaluate it for a truth value (t).

Putting the semantics and the syntax for the positive form altogether, we get a representation along the lines of (2.12).

[10]There are other ways to achieve the same purpose, but again, for the sake of exposition, we will stick with the denotations used in the sources we will be most closely examining throughout.

(2.12) Compositional semantics/syntax representation of degree morphology



Comparative constructions are assumed to work in more or less the same fashion as the positive form, only rather than being compared to a contextually supplied standard, the individual (the comparee) is being compared to an explicitly provided standard (the standard of comparison). The degree morphology, rather than being supplied by a null *pos* morpheme, is instead supplied by overt degree morphology.

2.2.2 Semantics of comparatives cross-linguistically

Before examining how the semantics of degrees extends to comparatives, however, we need to take a closer look at the semantic and syntactic differences that have been observed cross-linguistically between the different comparative types we examined at the beginning of this chapter in §2.1. For this, we will focus our attention on the typological dependencies proposed in Beck et al. (2009). We will then examine how Kennedy (2007) in particular formalizes these and other observations into the denotations of the lexical entries available for use as degree morphology. The aim is to arrive at preliminary analyses for ASL's MORE- and BEAT-constructions that are grounded in typological tendencies.

Typological parameters proposed by Beck et al. (2009)

One of the most extensive cross-linguistic surveys regarding the syntax and semantics of different comparison strategies was conducted by Beck et al. (2009). Previous cross-linguistic work surveying a large number of languages tended to focus on the form comparisons took (such as Ultan 1972 or Stassen 1985) or sought to relate the comparison strategies with other features of the language, particularly strategies concerning event representation (such as Stassen 1985 or Ansaldo 2004). With respect to the typological variety of the 14 languages represented in their survey, Beck et al. (2009) make a point of indicating that 1 language uses a conjoined strategy and that 2 languages use an exceed strategy.[11] The items in the questionnaire ranged from establishing baselines–such as how the language expresses the positive, comparative, superlative, and equative for a given predicate–to questions concerning whether the language has a particular degree question word/particle, to examining the comparative itself in more detail with respect to whether it can be used to compare adverbs and clauses, among other data points. While the current study does not use the questionnaire in full, it does inform several of the items developed for use in this study, as will be seen in the next chapter. For now, our focus is on the conclusions Beck et al. (2009) reach and how those conclusions might inform our initial hypotheses concerning the structures currently under investigation. In particular, we want to examine the three parameters Beck et al. (2009) propose to account for observed patterns in their results: the degree semantic parameter, the degree abstraction parameter, and the degree phrase parameter.

Beck et al. (2009) propose three parameter settings and further postulate that these parameters exist in dependency relationships with each other. The first parameter is what they call a degree semantics parameter, whether the language actually makes use of degrees in its semantics at all. If this setting is negative, that is if the language does not make use of degrees, then the settings for the other two parameters will automatically be negative as well. However, if this setting is positive, then the

[11]Reference the typology of Stassen (1985) discussed in §2.1.

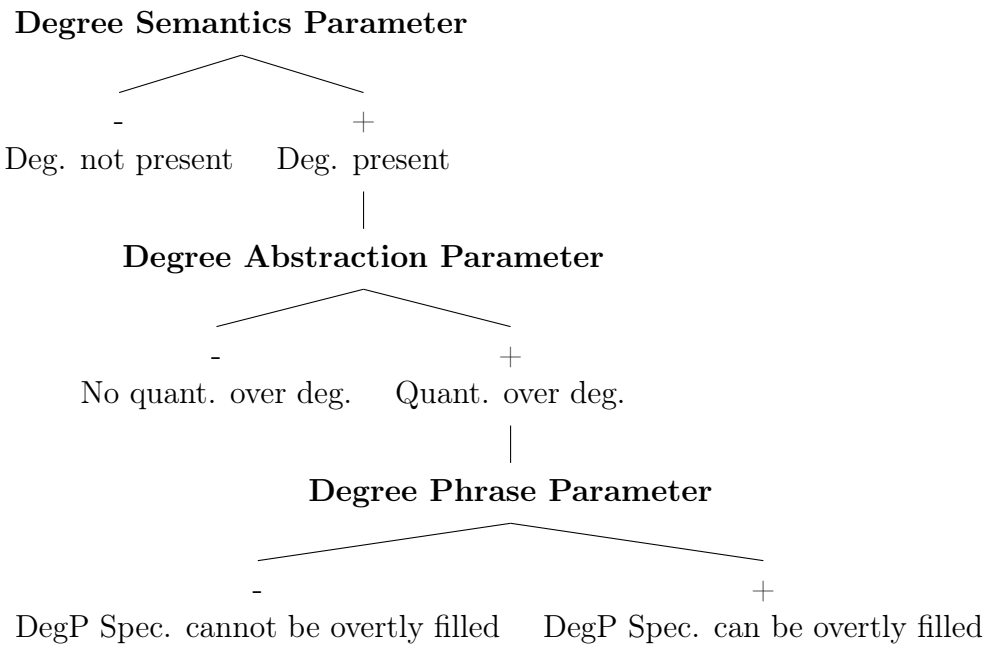


Figure 2.1.: Stylized representation of parameters proposed in Beck et al. (2009)

next parameter a language has to set is the degree abstraction parameter, whether the language can quantify over degrees. If this setting is negative, then the setting of the third parameter will be negative as well. However, if this setting is positive, then the last parameter a language will have to set is the degree phrase parameter, whether the language can overtly fill the specifier of the degree phrase. These parameters and their dependency relations are stylized in Figure 2.1.

The first of these parameters, the degree semantic parameter, posits that languages may opt out of using degree semantics altogether. As a matter of fact, some theorists argue that there is no need to resort to having degrees in the ontology for any language. (See, Klein 1980 and van Rooij et al. 2008, among others.) Even among theorists who argue for a degree semantics, the possibility that a language may choose to not use degrees, at least in their comparative structures, is still acknowledged. Kennedy (2007), for instance, specifically posits that languages using a conjoined-strategy for comparisons may lack degrees. Bochnak (2013) also later claims that Washo, another

conjoined-strategy language, lacks degrees. For Beck et al. (2009), two of the key features that lead to arguing for the degree semantics parameter are the inability for the conjoined comparative in Motu to form what are called degree differentials (2.13) and degree comparisons (2.14).

(2.13) Motu's reported incompatibility with degree differentials

**Mary na lata 2cm to Frank na kwadoḡi.*

Mary TOP tall 2cm by but Frank TOP short

Intended: "Mary is 2cm taller than Frank." (Beck et al. 2009: 19)

(2.14) Motu's reported incompatibility with degree comparisons

**Mary na lata, 1.70m.*

Mary TOP tall, 1.70m

Intended: "Mary is taller than 1.70m." (Beck et al. 2009: 19)

For now, the important thing to remember is that it is generally accepted that a language or a given comparison structure may not actually involve the use of degrees and that furthermore, the ability to form degree comparatives and differential degree comparatives are associated with the presence of degrees.

The second parameters of variation that Beck et al. (2009) propose is the degree abstraction parameter. On their analysis, the degree abstraction parameter determines whether a language is able to quantify over degrees. English is claimed to have a positive setting for this parameter. They particularly associate data from scopal effects and negative island effects in association with the degree abstraction parameter (2.15).

(2.15) Beck et al. (2009) positive degree abstraction parameter examples in English

a) Scope effects

This draft is 10 pages long. The paper is required to be exactly 5 pages longer than that.

i) The length the paper reaches in all situations meeting the requirements is 15pp.=the minimum length required for the paper is 15 pages

ii) In all situations meeting the requirements, the length of the paper is 15 pp.=the paper must be exactly 15 pages long

b) Negative island effects

* Mary bought a more expensive book than no boy did.

(Beck et al. 2009)

Beck et al. (2009) argue that the scopal and negative island effects seen in (2.15) are associated with the presence of a covert operator that can bind a degree variable, that is which involve quantification over degrees. They furthermore attribute the lack of such effects to a negative degree abstraction parameter. That is for languages where the equivalent of (2.15 a) has no ambiguity and the equivalent of (2.15 b) is permissible, such as Japanese, quantification over degrees does not take place, hence eliminating effects from a covert operator that binds a degree variable. For the time being, what matters is that these structures are often seen as evidence of quantification over degrees. Note that it makes perfect sense why the setting for this degree abstraction parameter would be dependent on the setting for the degree semantics parameter. If no degrees are present, then there is no need to quantify over them. However, if degrees are present, then a language may choose to allow or bar quantification over them.

The third parameter put forward by Beck et al. (2009) is the degree phrase parameter. This parameter determines whether a degree phrase's specifier may be overtly filled. English is also taken to have a positive setting for this parameter, and this positive setting is associated with the ability to form (direct) degree questions, to use measure phrases with bare adjectives, and to form subcomparatives (2.16).

(2.16) Beck et al. (2009) positive degree phrase parameter examples in English

a) Degree question

   How tall is Captain Apollo?

b) Measure phrase

   Captain Apollo is exactly 1.74 m tall.

c) Subcomparative

   Helo's shoes are longer than this cupboard is deep.

(Beck et al. 2009)

They argue that items like (2.16) all require overtly filling the degree argument position of a gradable predicate, which typically amounts to the same thing as saying that it requires overtly filling the specifier position of an adjective phrase. What is important to understand here is that these three constructions share a strong association with each other and that their presence is furthermore highly correlated with all the previous constructions associated with the other two parameters being present and available in the language.

A result of particular relevance to the current study is that the two languages Beck et al. (2009) explicitly identify as exceed-strategy languages, namely Yorùbá and Mooré, pattern most closely with Mandarin and Japanese, which are argued to have positve degree semantics parameter but negative degree abstraction and degree phrase parameters.[12] Though the results in Beck et al. (2009) and therein do indicate that two languages using the same general comparison strategy may nevertheless exhibit differences in the syntax and semantics of their respective comparatives, this syntax/syntactic patterning of exceed-strategy languages with Japanese provides a starting point for what we might expect at least the semantics, if not the syntax, of ASL's BEAT-construction to look like. Likewise, the syntax and semantics of the English canonical comparative of superiority provides a starting point for developing hypotheses concerning the ASL MORE-construction.

[12]Of related interest, one of the more detailed syntactic analyses of an *exceed*-strategy comparative is the treatment of Cantonese *gwo3*-comparative construction in Mok (1998). Also of interest with respect to the semantics of grammaticalization is how Lam (2014) provides a unified analysis for this comparison and experiential aspect in Cantonese.

Parameters in the lexicon a la Kennedy (2007)

Instead of following the analysis put forth in Beck et al. (2009) (following the analysis in Beck, Oda & Sugisaki 2004) to account for the differences between English and Japanese comparatives, however, we will use the analyses put forward in Kennedy (2007) as the starting point for formulating our analyses of the ASL MORE- and BEAT-constructions. One of the main differences between the two approaches is that whereas Beck et al. (2009) locate differences between the behavior of comparatives in (mostly syntactic) parameters, Alrenga & Kennedy (2014) and prior incorporate those differences into the lexical entries for the standard marker and comparative morphology. Because we are comparing two constructions that exist within the same language, an approach that relies on parameter settings, which are meant to capture patterns seen throughout a language, will not offer us the flexibility in analysis we will need. However, locating differences in the denotations of the standard markers will allow us more freedom to investigate the syntax/semantics interface at the construction–rather than language–level, which better serves the aims of the current endeavour.

The main differences being accounted for in both Beck, Oda & Sugisaki (2004) and Kennedy (2007) between English canonical comparisons of superiority and Japanese YORI-constructions involve negative island effects and subcomparatives. As we saw in §2.2.2, English exhibits what are called negative island effects (2.15) and allows for the formation of subcomparatives (2.16), both relevant examples repeated in (2.17). Japanese, however, does not exhibit negative island effects and does not seem to allow for the formation of subcomparatives (2.17).

(2.17) Example of differences in English and Japanese comparatives

a) Negative island effects

i) English

*Mary bought a more expensive book than no boy did.

ii) Japanese

John-wa *dare-mo* *kawa-naka-tta* *no* *yori* *takai*
John-Top anyone buy-neg-Past ON YORI expensive
hon-o *katta.*
book-Acc bought
'John bought a more expensive book than the one that nobody bought.'

b) Subcomparatives

i) English

Helo's shoes are longer than this cupboard is deep.

ii) Japanese

**Kono* *tana* *wa* *ano* *doa-ga* *hiroi* *yori(mo)*
this shelf Top that door-Acc wide YORI(MO)
(motto) *takai.*
(MOTTO) tall
Intended: 'The shelf is taller than the door is wide.'

(Beck et al. 2009)

Kennedy (2007) argues that the observed differences in the behavior of English canonical comparisons of superiority and Japanese YORI-constructions are better located in the denotations of their standards of comparison rather than in the degree abstraction parameter argued for in Beck, Oda & Sugisaki (2004), Beck et al. (2009).[13] In particular, Kennedy (2007) argues that the English canonical comparison of superiority is a degree-type comparison (i.e., clausal) and that the Japanese YORI-comparison is an individual-type comparison (i.e., phrasal).

The semantic analysis given for the English canonical comparative of superiority in Kennedy (2007) is shown in (2.18), which fits in with the syntax as shown in (2.19).

(2.18) Semantics of English MORE in Kennedy (2007)

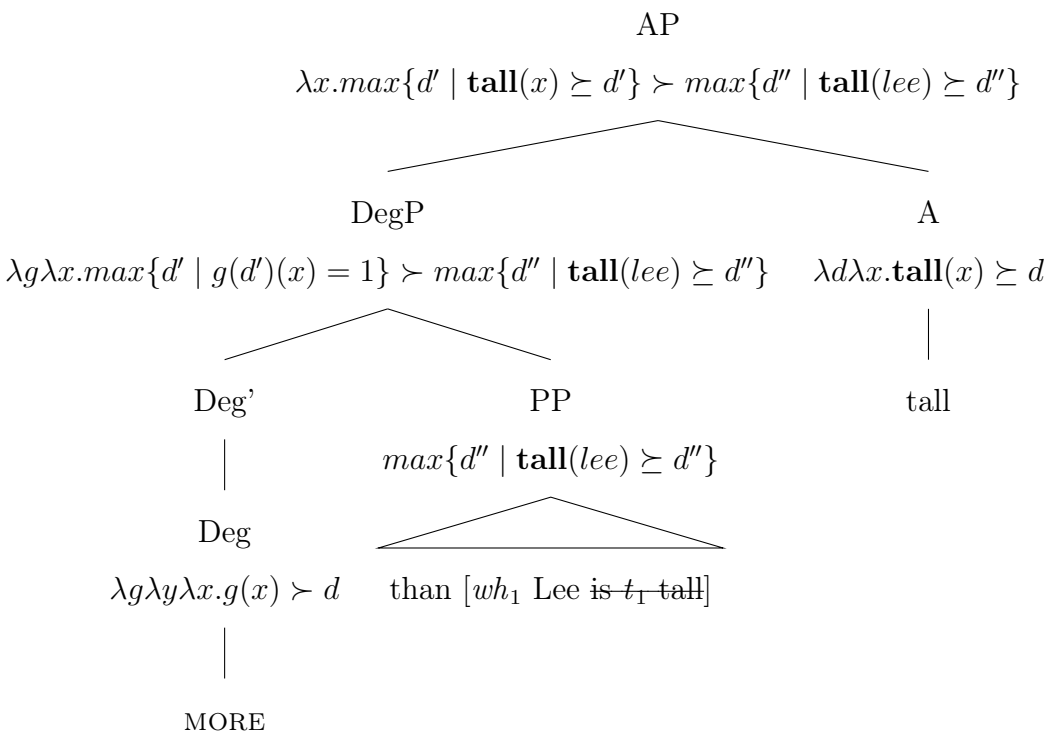
[13]The dates involved here appear slightly odd due to the nature of the publications involved. Beck et al. (2009) actually cite Kennedy (2007) as *to appear* in the Chicago Linguistic Society's proceedings from CLS43. CLS43 was hosted in 2007, but the proceedings were not made available in a hardcopy format until 2009. Nevertheless, the Kennedy paper is frequently cited in the literature by the conference year, 2007. Furthermore, key pieces of the analysis in Beck et al. (2009) are put forward in Beck, Oda & Sugisaki (2004). Therefore, certain arguments that Kennedy (2007) put forward serve as a reply to some of Beck et al. (2009).

$$[\![\text{MORE}_D]\!] = \lambda d \lambda g \in D_{<d,et>} \lambda x.max\{d' \mid g(d')(x) = 1\} \succ d$$[14]

(2.19) Syntax/Semantics of English canonical comparatives in Kennedy (2007)

a. Kim is taller than Lee (is).

b.



Kennedy makes two assumptions about the syntax-semantics interface in this analysis: "The first is that the comparative morpheme and the than-phrase are a constituent at LF; the second is that the complement of than is a clausal constituent that denotes a maximal degree, which may be targeted by ellipsis (see e.g. Chomsky 1965, 1977; Bresnan 1973; Stechow 1984; Heim 1985, 2000; Bhatt & Pancheva 2004)." Here, the morpheme MORE takes the place of the previously considered *pos* in the specifier of the adjective phrase (reference §2.2.1). Just like with *pos*, the denotation of MORE is such that it expects to receive a gradable property, and an individual. However, unlike *pos*, instead of supplying a function that determines the contextual standard, MORE first receives a degree argument that has been computed from the standard of

[14]Subscript D after MORE added to representation in Kennedy (2007) for clarity.

comparison. This is possible when the standard of comparison is clausal and can bind a degree variable that it then passes up to MORE. That is, a gradable property inside of the standard of comparison combines with the individual inside of that standard of comparison in order to produce a degree. More specifically, the degree produced is the maximum degree for the individual within the standard of comparison. A person who is *6ft* tall technically also possesses the degree of *5ft*, but that is not the degree we want selected for the standard of comparison, and the maximality operation ensures the proper degree is calculated. After a series of computations, that degree can be compared with the degree computed for the comparee. This results in two degrees being compared to one another to ensure that they have the proper ordering.

The Japanese YORI-construction, on the other hand, has a standard marker that is assigned the denotation (2.20) by Kennedy (2007).

(2.20) Semantics of Japanese MORE (YORI) in Kennedy (2007)

$$[\![\text{MORE}_I]\!] = \lambda y \lambda g \lambda x. max\{d' \mid g(d')(x) = 1\} \succ max\{d'' \mid g(d'')(y) = 1\}$$

In this denotation, the standard marker expects two individuals and a gradable property, and calculates and compares their degrees with respect to a given property simultaneously.

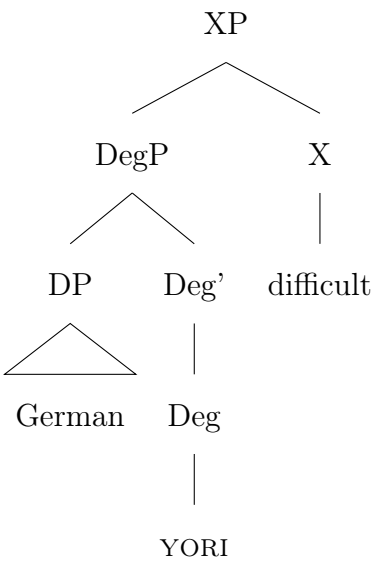
Kennedy (2007) as well as Beck, Oda & Sugisaki (2004), Beck et al. (2009) are a little less explicit about the syntax associated with Japanese YORI-comparatives. As far as I can tell, they all seem to assume the same syntax as English canonical comparisons of superiority, meaning that (2.21) should receive a simplified representation of (2.22), treating Japanese as a head-final language and remaining indeterminate about the lexical category of the gradable property *difficult*.

(2.21) Example of Japanese YORI-comparative

nihonga-wa	*doitsgo*	*yori*	*muzukashi.*
Japanese-TOP	German	YORI	difficult

'Japanese is more difficult than German.' Kennedy (2007)

(2.22) Possible syntax of Japanese YORI-constructions based on Kennedy (2007)



An rough visualization of the difference between these two approaches can be achieved by imagining two different ways of comparing the heights of two plants. The degree-type approach is like determining which of the two plants is taller by first measuring them against two separate rulers and then comparing marks made on the rulers to each other (Figure 2.2). The individual-type approach, on the other hand,

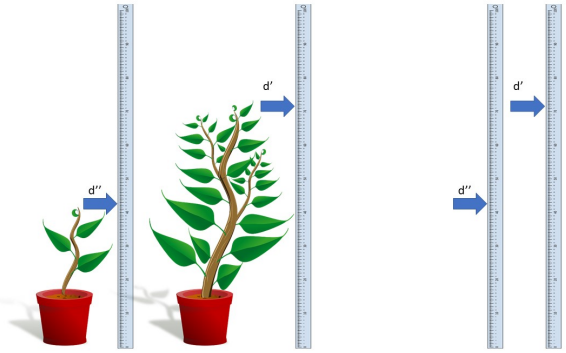


Figure 2.2.: Visualization of semantics of degree-type standard marker

15

is more like measuring the two plants against the same ruler all at once (Figure 2.3). Here, the plants stand in for individuals, the ruler stands in for the gradable property of *tall*, which has the dimension of *height*, and the blue arrows represent the respective

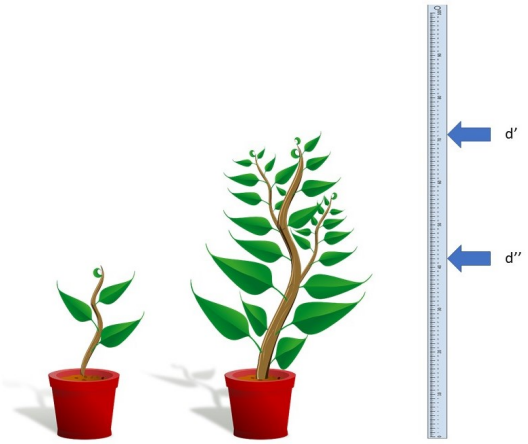


Figure 2.3.: Visualization of semantics of individual-type standard marker

degrees that each plant has along the dimension of *height*. Both approaches involve degrees, but the degree-type, or clausal, comparison is able to compare those degrees directly. The individual-type, or phrasal, comparison only has one ruler against which to measure the degrees of both of the individuals involved.

In Kennedy (2007), analyzing English as having a degree-type, or clausal, comparison and Japanese to have an individual-type, or phrasal comparison is taken to straightforwardly account for why English exhibits negative island effects and allows for subcomparatives whereas Japanese does not show negative island effects and does not allow for subcomparatives. Negative island effects are the result of a maximality function existing in the standard of comparison as part of returning the appropriate degree variable to the standard marker, and such an operation is not present in Japanese standards of comparison because they provide individuals rather than degrees to the standard marker. Subcomparatives require the ability to compare the degrees associated with two different objects that are calculated over two different, but commensurable, dimensions, such as the length of the truck and the height of the tree in Figures 2.4 and 2.5. The phrasal standard can only calculate the degrees of both individuals with respect to the same property; there is essentially only one ruler available and it can only be used in one direction, as stylized in Figure 2.4. Only the clausal standard of comparison allows for two gradable properties to be used with the end result of comparing two degrees directly to one another, as stylized in Figure 2.5. Kennedy (2007) makes the further observation that while the denotation of the degree-type, clausal comparison cannot be derived from the phrasal, individual-type standard, it is the case that the phrasal, individual-type standard can be derived from the clausal, individual-type standard.

It should be understood that in this usage, "clausal standards" are understood to have a wh-operator that binds a degree variable. In other words, some of these terms encompass a co-occuring difference in semantic type as well as in syntactic category. However, there is a distinction between the claim that a comparison has a clausal standard and that a comparison has a standard that is a clause. In the

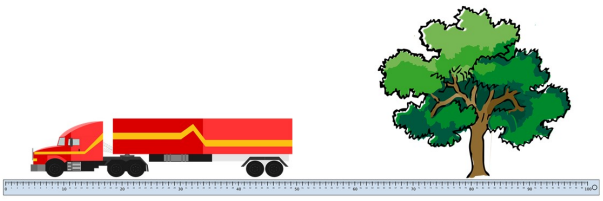


Figure 2.4.: Visualization of inability of individual-type standard marker to form subcomparatives

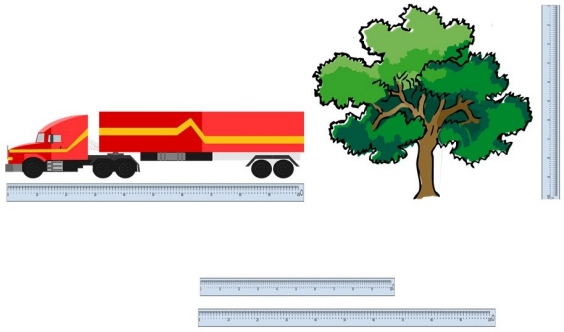


Figure 2.5.: Visualization of degree-type standard marker's ability to form subcomparatives

former case about which we are concerned, the standard has bound a degree variable and exhibits evidence of a wh-operator. In the latter, the standard may syntactically have a clausal phrase, but it is treated semantically as an entity when it is handed over to the standard marker and there is no evidence of degree binding. It would be considered a "phrasal" standard or comparison. In Japanese standards of comparison can be quite complex, but the consensus seems to be that cases that at first look like clausal comparatives involve relative clauses and are nevertheless phrasal comparatives. (Kennedy 2007 credits Ueyama 1998 as being the earliest he knows of to have made the claim that complex standards of comparison in Japanese involve relative clauses. It is a claim that both Kennedy 2007 and Beck, Oda & Sugisaki 2004 accept as well.)

Implict and explicit standards of comparison

One other analysis that Kennedy (2007) entertains but ultimately rejects is the idea that the standard of comparison in Japanese YORI-comparatives does not provide a degree argument directly, but rather manipulates the contextually provided standard of comparison. The former is referred to as an explicit comparison and the latter as an implicit one. The difference can be seen when considering the English *compared-to* construction (2.23).

(2.23) English *compared-to* construction

Compared to Jane, Jennifer is tall.

In (2.23), Jane is seen not as supplying an explicit degree for comparison, but as adjusting the contextually supplied standard already computed by the *pos* morpheme. Kennedy (2007) shows that this can be demonstrated by the fact that the *compared-to* construction 1) cannot take measure phrases, 2) cannot give rise to crisp judgments, and 3) results in what is referred to as an anti-norm-relatedness reading.[16]

[16]There is another test Kennedy (2007) uses involving minimal standard properties, but this test will not play a role in the remainder of the discussion.

We will further define and review each of these points in turn, particularly since this explicit/implicit distinction was the major focus of Wilbur et al. (2018), who showed that BEAT- is an explicit comparative. They support this argument by showing that, unlike the English *compared-to* construction, the ASL BEAT-construction can take measure phrases, gives rise to crisp judgments, and is not interpreted with respect to the positive form (i.e., does not exhibit norm-relatedness).

The first test that Wilbur et al. (2018) use to show that the BEAT-construction is an explicit comparative is that it can take measure phrases, albeit only with the addition of the lexeme FINISH to the construction (2.24).

(2.24) BRUNO PAPER *(FINISH) BEAT 15 PAGE)

'Bruno's paper is longer than 15 pages.' (Wilbur et al. 2018: 66)

In this case, instead of taking another entity as the standard of comparison, for example another paper, the construction instead takes a measure phrase, *15 pages* in this example, as the standard of comparison. As noted above, measure phrases are particularly associated with explicit degrees and it is difficult to see how the standard of comparison could be a contextually-supplied variable in this case.

Another reason Wilbur et al. (2018) argue the BEAT-construction is an explicit comparison involves the fact that the construction gives rise to 'crisp-judgments' (2.25).

(2.25) Context: Eva's essay is 1000 words long and Mary's essay is 998 words long.

$_i$EVA PAPER (BARELY/ALMOST) $_{(i)}$BEAT$_j$ ($_j$MARY) (Wilbur et al. 2018: 67)

Crisp-judgments involve items that can be ranked based on numerical values associated with each respective entity but that are categorically the same with respect to the comparative predicate. In the above example, both essays should count as either short or long, but one should not count as short while the other counts as long. However, the essays can still be ranked because 1000 is exactly 2 words more than 998. An example of a construction that does not allow for this kind of crisp judgment is the *compared-to* construction in English (2.26).

(2.26) CONTEXT: A 600 word essay and a 597 word essay

a. This essay is longer than that one.

b. #Compared to that essay, this one is long. (Kennedy 2007)

Unlike in the ASL example given above, both essays being compared, should count as short. However, the essays cannot be ranked with respect to each other using this particular construction. There is no crisp judgement available in this case. However, as shown in (2.25), the BEAT-construction does give rise to a crisp judgment in similar circumstances.

The last piece of evidence Wilbur et al. (2018) supply to argue that the BEAT-construction is an explicit comparison is that it does not necessitate a norm-relatedness reading, though this point is slightly muddier. Norm-relatedness is an issue we will delve into in more detail when we review the tests employed by the current study. For now, norm-relatedness readings can be thought of as understanding someone to be making a claim that the individual being described is above normal based on the normal distribution of the relevant comparison class, essentially the reading given to the positive form. However, it is possible to use the BEAT-construction to compare two entities with respect to a property, such as *cleanliness*, without making a claim concerning whether the entities being compared are considered to otherwise be truthfully described with that comparative property, in this case CLEAN (2.27).

(2.27) ($_i$SON, $_j$DAUGHTER ROOM BOTH DIRTY BUT)

(My son and daughter's rooms are both dirty but...)

$_i$SON ROOM CLEAN $_{(i)}$BEAT$_j$ $_j$DAUGHTER ROOM

My son's room is cleaner than my daughter's room. (Wilbur et al. 2018: 65)

If using the BEAT-construction to compare the son's and the daughter's rooms required that we be able to describe either of the children's rooms independently as CLEAN, that is if (2.28) or (2.29) had to be true also, then we would say that (2.27) requires a norm-related reading.

(2.28) SON ROOM CLEAN

My son's room is clean.

(2.29) DAUGHTER ROOM CLEAN

My daughter's room is clean.

However, because (2.27) can be uttered without the speaker also making a claim about whether either is CLEAN–again, as to whether (2.28) or (2.29) is true–then we say that it does not require a norm-related reading. Given the context of (2.27), it would seem obvious that a norm-related meaning is not required for this construction. Again, this question of whether the standard of comparison is contributing a degree or manipulating a contextually provided variable is one we will revisit for BEAT and attempt to establish for MORE in this study as part of the overall analysis provided for each.

One further note before moving on to formulate the initial hypotheses that form the basis of the current study. There are several changes made between the analysis of Kennedy (2007) and the analysis put forward in Alrenga & Kennedy (2014), which focuses primarily on the semantic analysis of the English comparative. Most of these changes are driven by the need to account for a variety of complex scopal-interactions and quantifier effects.[17] However, for reasons that will be discussed more in chapter 3, the current study does not test for or treat the scopal-interactions or quantifier-effects that drive the adoption of the analysis in Alrenga & Kennedy (2014) and for the most part, would not be able to distinguish between that analysis and the one presented in Kennedy (2007). Alrenga & Kennedy (2014) maintains the phrasal/clausal distinction in the same manner as Kennedy (2007), excepting that while the latter locates the distinction in the lexical entries for MORE, former locates the distinction in the lexical entries for THAN. In consequence, for ease of exposition, rather than review all of the differences between the analyses in Kennedy (2007) and Alrenga & Kennedy (2014)

[17]Roughly, this is done by giving a denotation for the comparative morpheme that is distinct from the standard marker in English comparatives and by positing the presence of two covert quantifiers, SOME over the degree of the comparee and NO over the degree of the standard, as well as the presence of a second covert MORE associated with the unpronounced/ellided gradable property associated with the standard of comparison in the derivation.

in detail, we will only observe here that while we adopt the semantic denotations of Kennedy (2007) for ease of exposition, they do not necessarily reflect the most current understanding of how English canonical comparatives should be modeled.

2.3 Hypothesized analyses for ASL MORE- and BEAT-constructions

Setting aside these finer points of the analyses under consideration, based on cross-linguistic typological considerations, we will start with the assumption that ASL MORE-constructions have a syntax and semantics similar to that of English canonical comparisons of superiority and that ASL BEAT-constructions at least have a semantics similar to that of Japanese YORI-comparatives. Given the already known syntactic differences concerning lexical categories with respect to ASL BEAT and Japanese YORI, namely that BEAT is a verb while YORI is derived from a locational morpheme, we will start with a slightly modified set of assumptions about the ASL BEAT-construction's syntax, namely by assuming that BEAT acts syntactically like a verb even when being used to form a comparison. Most of the differences in behavior we expect to find between the ASL MORE- and BEAT-constructions in this study we expect to stem from their differences as clausal and phrasal comparisons, respectively.

3. CURRENT STUDY

Now that we have arrived at a tentative hypothesis for each construction, it is time to examine the tests employed in this study in more detail. The most immediate facts necessary to begin evaluating the proposed analyses for their respective syntax and semantics involve addressing the research questions outlined in Chapter 1. Namely, we need to probe the clausal boundaries and constituency structure for each construction, to ascertain whether and how degrees are involved in each construction's derivation, and to figure out how the standards of comparison are composed.

3.1 Locating constituents and clause boundaries

The first issue that needs to be addressed for both constructions is their respective clausal boundaries and constituency structures. Currently, there do not appear to be any claims in the ASL literature about the specific syntactic structure of either construction beyond the claim in Wilbur et al. (2018) that BEAT is a verb. Wilbur et al. (2018) furthermore present several word order variations involving BEAT as having the same structure, but do not test for clausal boundaries or constituency. However, even the seemingly simple question of whether we are dealing with a single matrix clause, and therefore, how exactly to define each construction, is not something that can be taken for granted.

As mentioned in §1.1.2, ASL is a pro-drop language (Shepard-Kegl 1985, Lillo-Martin 1986). This means that an alternative analysis that needs to be entertained, particularly for the BEAT-construction, is that multiple independent clauses are involved. For instance, it may be the case that (1.2), repeated here as (3.1), should actually be analyzed as involving several independent clauses (3.2) rather than as being composed of only one independent clause (3.3).

(3.1) ASL BEAT-construction

$_i$EVA TALL , $_j$BRUNO TALL $_{(i)}$BEAT$_j$

'Eva is taller than Bruno.' (Wilbur et al. 2018)

(3.2) ASL BEAT-construction analyzed as multiple (independent) clauses

[$_i$EVA TALL]CP [$_j$BRUNO TALL]CP [$_{(i)}$BEAT$_j$]CP

'Eva is tall. Bruno is tall. Eva beats Bruno.'

(3.3) ASL BEAT-construction analyzed as single clause

[$_i$EVA TALL $_j$BRUNO TALL $_{(i)}$BEAT$_j$]CP

'Eva's tallness beats Bruno's.'

This is of particular concern because it impacts not only the syntactic representation, but also what options are available in the semantic representation concerning how the apparent comparative predicate is interpreted with respect to the comparee and the standard of comparison. We would, for instance, expect the syntactic representation in (3.2) to involve the positive assertions that both *Eva* and *Bruno* count independently as *tall*, whereas the representation in (3.3) would not necessarily carry such entailments.

3.1.1 WH-doubling as test for clausal boundaries

In order to decide between the analyses in (3.2) and (3.3), we need to establish the outer left and right boundaries of the highest matrix, or independent, clause. ASL's WH-doubling construction (3.4) provides the means to test just that.

(3.4) ASL WH-doubling

$\overline{\text{WHO BUY C-A-R WHO}}^{\text{whq}}$

'Who bought the car?' (Petronio 1993: 134)

The WH-doubling construction is characterized by the appearance of a WH 'twin' at the beginning of a matrix clause and a WH 'double' at the end of the construction

and by the presence of wh-question NMMs occurring over both the WH-words and all intervening content. (Regarding NMMs in ASL more generally, reference §1.1.2.) In (3.4), the question phrase targeting the subject of the sentence, WHO, is doubled and the 'whq' non-manual occurs over the entirety of the utterance.

Under the analysis put forth in Petronio (1993) and further argued for in Petronio & Lillo-Martin (1997), the WH-doubling constructions like (3.5) involve leftward movement of the WH-phrase, that is the 'twin,' to the spec of CP (potentially at LF if it is moving from an embedded clause) and the 'double' is base-generated in the head of C, which is on the right in ASL.

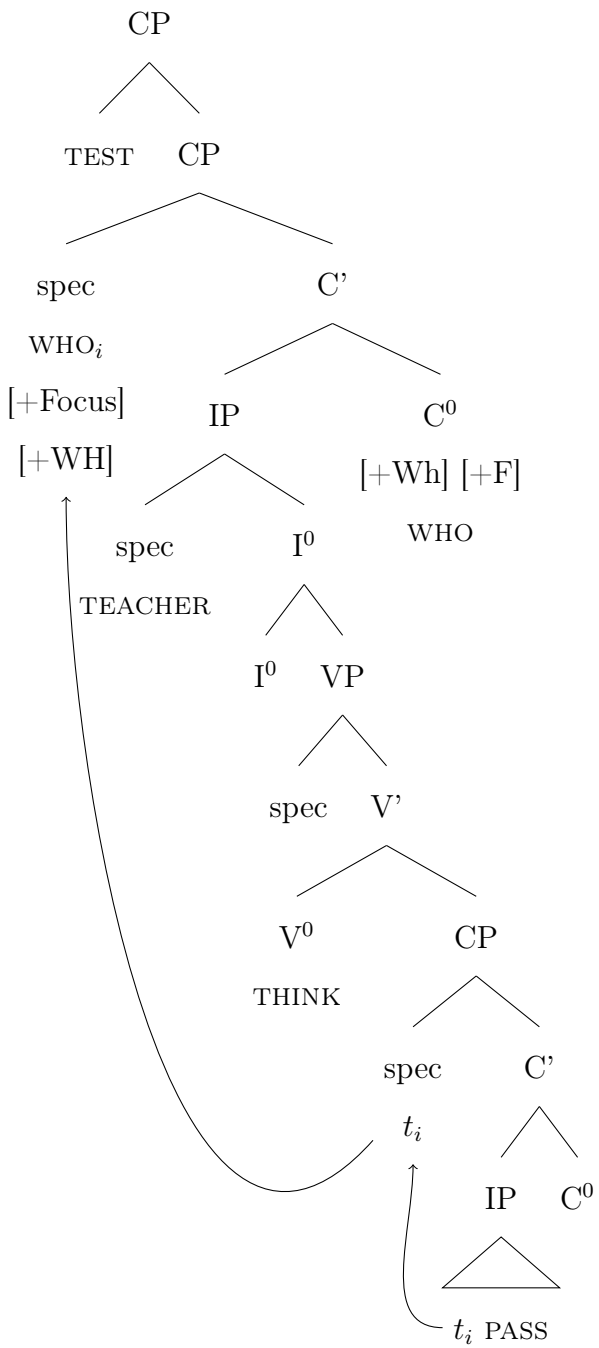
(3.5) $\overline{\text{TEST}}^{\text{t}}\ \overline{\text{WHO TEACHER THINK PASS WHO}}^{\text{whq}}$

'Who does the teacher think passed the test?' (Petronio 1993: 152)

Though overt wh-movement does not typically occur in simple questions in ASL (reference §1.1.2), the movement is motivated in this case by the need to check off focus and question features carried by the base-generated double.

This analysis is illustrated in (3.6).

(3.6) Petronio's (1993) analysis of WH-doubling construction in (3.5)



(Petronio 1993: 152)

In (3.6), the WH-word targets the person or people that the teacher thinks to have passed a given test. The 'double' WHO is base generated in C^0, which branches to the right. The 'twin' WHO actually originates lower in the tree as the subject of PASS, as indicated by the co-indexing ($_i$) with the traces (t) in the spec of the lower CP and

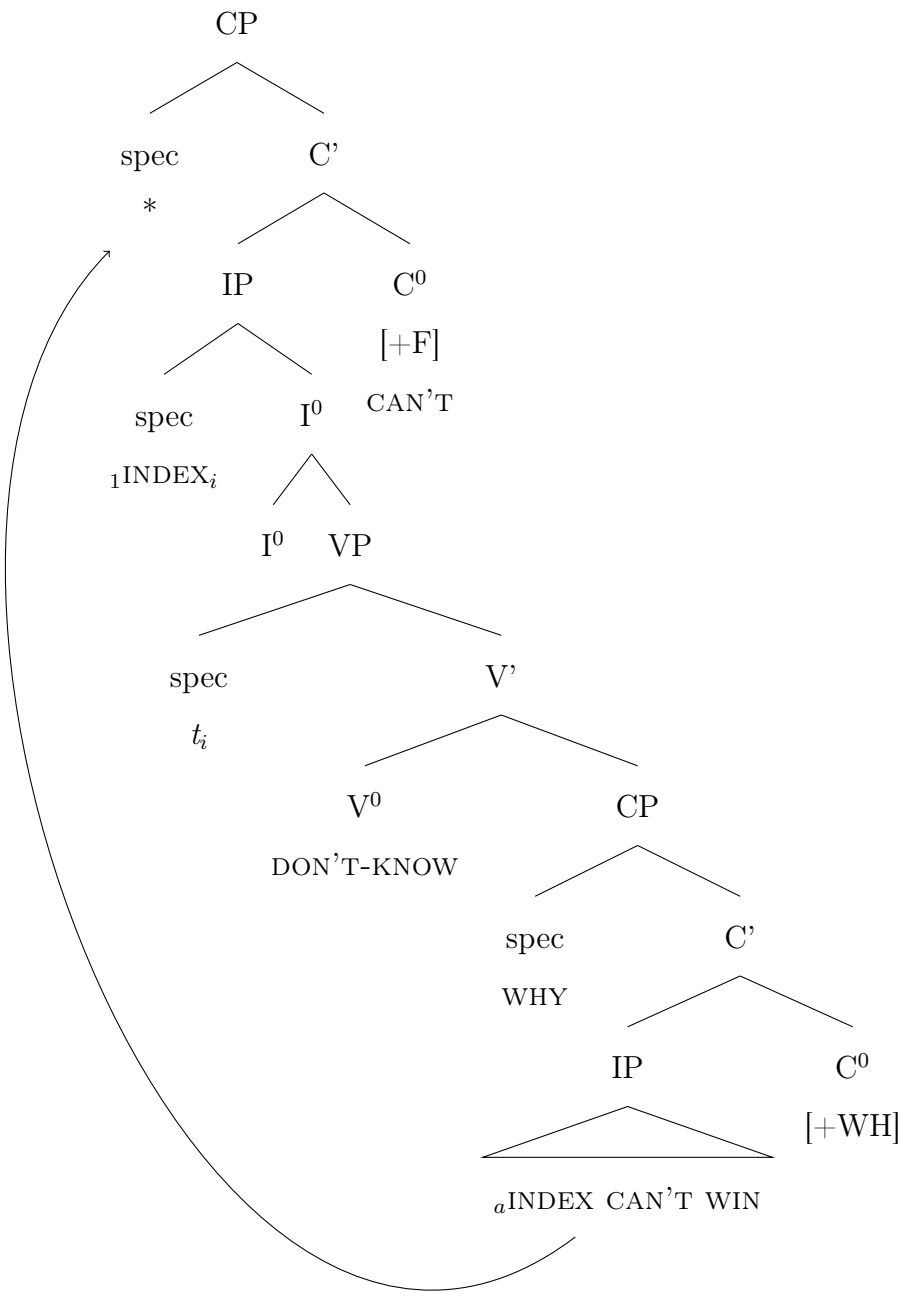
the subject position of PASS. However, the 'twin' moves leftward, first into the spec of the dependent CP and then once again up into the spec of the matrix CP. This puts it in a spec-head relationship with the base-generated 'double' in the head of the matrix CP. This enables it to check-off the strong focus ([+F]) and wh-features ([+wh]) associated with the 'double.'

The construction is furthermore reported to be sensitive to island constraints (3.7) (Petronio 1993). (Note that though (3.7) involves doubling of the modal CAN'T , Petronio 1993 treats it with a relevantly similar analysis as WH-DOUBLING .)

(3.7) *$_1$INDEX DON'T-KNOW WHY $_a$INDEX CAN'T WIN CAN'T
'I don't know why (she) can't win.' (Petronio 1993: 146)

This means that if the spec of a C for a dependent clause is filled and the WH-phrase originates within that dependent clause, then it will be blocked from moving out of the lower dependent clause and into the spec of C for the matrix clause, resulting in an ungrammatical utterance.

(3.8) Petronio's (1993) analysis of WH-island constraints for ungrammatical WH-doubling construction in (3.7)



(Petronio 1993: 146)

In (3.8), we see that the 'twin' for the modal CAN'T originates below the spec C of the lower, dependent clause. It is unable to move leftward up into the spec C of the upper matrix clause because of the presence of WHY in the spec C of the lower, dependent clause. According to Petronio (1993), this is because of relativized minimality, which requires that an A'-antecedent governs its own trace. However, the presence of WHY creates a more local governor of the trace that is not identical with the modal CAN'T. The 'twin' modal CAN'T is unable to enter into a spec-head relationship with the base-generated 'double' located in right-branching head of C of the matrix clause, the base-generated 'double' is unable to check off its focus feature, resulting in an ungrammatical construction.

Returning to the need to delineate clausal boundaries, the key feature of this construction for our purposes is that the 'twin' and 'double' in this construction appear at the left and right edges of the matrix clause, respectively.[1] Continuity of the 'whq' non-manual marker between the 'twin' and the 'double' further delineate the clausal boundaries. This means a test utilizing WH-doubling can be used to distinguish between analyses that posit multiple independent clauses, such as (3.2), and analyses that posit a single clause, such as (3.3). (For more on the issues concerning delineating clausal boundaries and identifying clausal types, including additional tests available, the reader is referred to Loos 2018.) As long as the WH-word can appear at the beginning and end of the construction with the appropriate non-manuals co-occuring over the entire production, we have good reason to believe that everything in between belongs to the same matrix clause.[2]

[1]As can be seen by the example provided above, topicalized elements can occur to the left of the 'twin.' However, they are easily identifiable by distinct, well-established NMMs (Aarons 1996), meaning that the extent of the matrix clause is still easily discernible.

[2]Neidle et al. (2000) disagree with the analysis in Petronio & Lillo-Martin (1997), instead mostly arguing that they involve tags in cases where the wh-subject is doubled, and that they involve topicalization of the object in cases where the wh-object is doubled. It should also be noted that the two differ in what utterances they report as grammatical; in other words, there is some dispute about the data. However, under either analysis, provided the 'whq' non-manual also spreads over and between the 'twin' and the 'double' wh-word, we still expect 1) that the intervening material all belongs to the same matrix clause and 2) that the wh-words pick out constituents within the clause.

More concretely, the test for determining whether a given instance of the BEAT-construction, such as (3.9), has a single matrix clause would look like the example given in (3.10).

(3.9) Example ASL BEAT-construction being tested

SNOW-WHITE BEAT QUEEN BEAUTIFUL

intended: *'Snow-white beat the queen with respect to beauty.'*

(3.10) Example ASL WH-double test for (3.9) & interpretation

$\overline{\text{WHO BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$

intended: 'Who *beat the queen with respect to beauty?'*

If grammatical: One matrix clause

In the example test, the comparee of the declarative form (3.9), SNOW-WHITE, is replaced with a WH-phrase (WHO) that occurs at both the beginning and the end of the utterance. Provided that the WH-doubling construction is found grammatical, then the declarative counterpart is comprised of a single matrix clause.

Because (3.10) involves WH-doubling of the comparee, we can actually furthermore conclude that if the item is judged ungrammatical, that the construction involves multiple matrix clauses. We can come to this conclusion because movement of the WH 'twin' of the comparee is highly unlikely to be blocked by the presence of a *wh* element in an intervening clausal phrase projection given that the comparee is generally seen as the first element and potential syntactic subject for any potential first matrix clause. This means failure of a structure involving WH-doubling of the comparee is more likely to result from problems with the WH 'double' that is base-generated in the head of the CP. The most likely reason, then, to reject WH-doubling of the comparee is that there is a matrix clausal boundary intervening between the base-generated 'double' and the 'twin,' preventing them from being in an appropriate spec-head relationship. Therefore, we will assume that tests involving WH-doubling of the comparee can tell us both whether a single matrix clause exists and also whether there are multiple matrix clauses involved.

Unlike cases involving WH-doubling of the comparee, cases involving WH-doubling of the standard of comparison, such as in (3.11), can fail for multiple reasons.

(3.11) Example ASL WH-double test for standard of comparison of MORE-construction & interpretation

$\overline{\text{WHO SNOW-WHITE MORE BEAUTIFUL THAN WHO}}^{\text{whq}}$

intended: 'Who *is Snow-white more beautiful than?'*

If grammatical: One matrix clause

If ungrammatical: Multiple matrix clauses, presence of syntactic island, or other movement violation

The first reason is the same as that already discussed for failure of the comparee to undergo WH-doubling, namely that multiple matrix clauses are involved. However, WH-doubling of the standard of comparison may also be deemed ungrammatical because of an intervening covert *wh*-operator sitting in the spec of C for an intervening dependent clause, as might be expected in cases involving clausal standards of comparison. Ungrammaticality may also be the result of other movement violations, such as trying to extract out of a complex noun phrase. Thus, though we can easily conclude that if a standard of comparison is allowed to undergo WH-doubling that the construction involves a single matrix clause, more information will be needed to interpret the result if the standard of comparison cannot undergo WH-doubling.

3.1.2 WH-doubling as test for constituency structure

An additional benefit of using the WH-doubling construction is that it also provides an initial constituency test. In general, it is expected that if something can be replaced with a wh-phrase it should form its own constituent, that is be a complete phrase. Note, however, that the inverse may not necessarily be true. That is, if something cannot be replaced by a wh-phrase, it does not necessarily follow that it does not form a complete phrase.

3.1.3 Interpretation of WH-doubling tests

To summarize, the following guidelines will be used in evaluating the results of the WH-doubling tests:

1) If doubling of the comparee fails, then the construction is composed of more than one matrix clause; however, if doubling of the comparee succeeds, then the construction is composed of one matrix clause.

2) If doubling of the comparee succeeds, then if doubling of the standard of comparison succeeds, the standard is allowed to be phrasal, whereas if it fails, then the standard of comparison has committed some kind of movement violation, possibly due to being within a dependent clause with a covert operator.

3) Furthermore, any part of the construction that can be targeted with WH-doubling forms an independent constituent.

Given the analyses put forward at the end of chapter 2, we expect to see doubling of the comparee to succeed for the MORE-construction and to succeed for the comparee for at least one iteration of the BEAT-construction that includes both the standard of comparison and the comparative predicate. For the BEAT-construction, our hypothesis that BEAT is a verb does not fully predict where we expect to see the comparative predicate or what other kinds of word-order constraints we may encounter with the BEAT-construction given the amount of variation already reported in the literature. Furthermore, we anticipate that as the comparative predicate in the MORE-construction should be attached to the degree morphology in a complex manner, it will likely not be allowed to undergo WH-doubling as it will not be a fully independent constituent. Again, the appropriate prediction in the case of the BEAT-construction concerning WH-doubling of the comparative predicate is less obvious because of the lexical category of BEAT. If BEAT is functioning like a degree phrase attached to a comparative predicate to form a more complex phrase the way that MORE is believed to, then we would expect the comparative predicate in the BEAT-construction to be

unable to undergo WH-doubling. However, if it is attached in a different manner, it may be able to do so. Overall, results from the WH-doubling tests should help us in refining these details of our initial hypotheses.

3.2 Presence and location of degrees

The second research question for which we need to establish tests is whether either construction shows any evidence of degrees in their derivation, and if so, what kinds of degree structures are licensed and whether there is evidence that the standard of comparison supplies a degree or simply manipulates the contextually provided standard. To elucidate the matter, a battery of tests involving degree differentials, degree comparisons, relationship to the positive form, subcomparatives, and competition with other potential degree morphology is used.

3.2.1 Degree differentials

The first set of tests for determining the presence of degrees involves what are referred to as degree differentials, which we saw briefly in the previous chapter. Degree differentials are measure phrases[3] that indicate the difference in degree between two items, such as *2 inches* in (3.12).

(3.12) English example of degree differential in comparison
Jane is two inches taller than Elizabeth.

Such differential phrases have been analyzed as being predicated of the gap between two degrees (Schwarzchild & Wilkinson 2002) and are generally taken as evidence that degrees are present. (See Kennedy 2007, Beck et al. 2009, among others). In fact, Morzycki (2007) sketches out how differential phrases indicate that the presence of degrees might extend across lexical categories and not be limited to adjectives, that is to gradable properties.

[3]The use of the term *differential* to describe the measure phrase in such cases goes back at least to Stechow (1984).

As mentioned in §1.2.5, such degree differentials are reported by Wilbur et al. (2018) as grammatical with the BEAT-construction (3.13), but no evidence one way or the other has been documented for the MORE-construction.

(3.13) ASL BEAT-construction with degree differential

$_i$KARL TALL, $_j$BRUNO TALL (ONE-INCH) $_{(j)}$BEAT$_i$

'Karl is tall, Bruno is one inch taller than Karl' (Wilbur et al. 2018: 65)

Furthermore, of the degree differentials for the BEAT-construction that Wilbur et al. (2018) report, most require additional supporting morphology, as in (3.14).

(3.14) ASL MORE in BEAT-construction

IX$_i$ FINISH SMOKE+++ $_{(i)}$BEAT$_2$ TWICE MORE THAN IX$_2$

They smoke twice as much as you. (Wilbur et al. 2018: 64)

The example in (3.14), presented in Wilbur et al. (2018) as showing BEAT as modifiable by a differential (TWICE), includes not only the free lexical item MORE, but the entirety of the MORE-construction. It is not clear whether such examples involve more than one matrix clause and therefore whether they show the differential phrase as part of the BEAT-construction. Altogether, it is worth the time to continue cross-validating these initial reports to build as robust a picture as possible of how degree differentials interact with the BEAT-construction in ASL.

To provide the best possibility of acceptance possible, the items testing the compatibility of degree differentials all involved comparative predicates believed to be able to readily associate with the Natural Numbers (height (TALL/LONG), weight (HEAVY), temperature (HOT/COLD), and age (OLD), more specifically).

(3.15) Example test items for degree differentials in the MORE-construction

EVA 2-INCHES/5-YEARS MORE TALL/OLD THAN KARL

Intended: 'Eva is 2-inches/5-years taller/older than Karl.'

With respect to interpreting the tests, if an item like (3.15) is judged grammatical, then the construction for which it is judged grammatical should have degrees available

at some point in its derivation. Conversely, an unavailability of degree differentials would be taken as evidence that the derivation does not involve multiple degrees as the differential needs a gap between two degrees to refer to (again, see Schwarzchild & Wilkinson 2002).

Given the analyses laid out in the previous chapter, we anticipate both the MORE- and BEAT-construction to be compatible with degree differentials as they should both involve two degrees in their denotations.

3.2.2 Degree comparisons

The second test for the presence of degrees is degree comparisons, a test we also saw briefly in the previous chapter. Degree comparisons involve the standard marker taking a measure phrase directly, as in (3.35).

(3.16) Degree comparison in English

a) John is more than 6 feet tall.

b) John is taller than 6 feet.

The ability of the comparative construction to take a measure phrase directly like this is (sometimes) taken as evidence that degrees are present in a language's ontology to begin with (Beck et al. 2009). However, with respect to the specific constructions, we can also take it as a starting point for determining more about how those degrees enter the computation.

As discussed in §1.2.5, Wilbur et al. (2018) report that the BEAT-construction can form comparisons of degree, but that the lexical sign FINISH is required to make the degree comparison grammatical. The use of FINISH in this case mirrors that of the verbal usage typically associated with a perfect/perfective reading (Duffy 2007).

(3.17) ASL BEAT-construction in degree comparatives

a) BRUNO PAPER *(FINISH) BEAT 15 PAGE
'Bruno's paper is longer than 15 pages'

b) BRUNO POUND *(FINISH) BEAT 150

'Bruno weighs more than 150 (pounds)' (Wilbur et al. 2018: 66)

It is unclear exactly what role FINISH is playing in this construction, but given the hypothesized analysis that the BEAT-construction is a comparison of individuals, FINISH may be doing some kind of "repair" work to allow BEAT to take a degree even though it expects to take an individual as its standard of comparison.[4]

With respect to the MORE-construction, there is at least one example of what appears to be a comparison of degrees in data previously collected by Purdue University's Sign Language Linguistics Lab for an unrelated project.

(3.18) ASL MORE-construction degree comparative

IX-3 LION IX-3 WOW HEAVY WEIGH THAN TWO-HUNDRED

'A lion weighs more than 200 (pounds)'

While the production did not include the comparative morphology MORE and used a very reduced form of THAN, this example still suggests that the MORE-construction is capable of forming degree comparisons and that furthermore, does so without the use of additional supporting morphology.

When it comes to interpreting the degree comparison tests, if degree comparisons are possible we will know that the language has degrees available. Degrees are furthermore likely involved in the construction under consideration, though our interpretation of that would change if degree differentials were allowed but not degree comparisons. If a particular construction is consistently unable to (directly) form degree comparisons, this would be seen as evidence that the construction likely selected for individuals rather than degrees. However, the opposite is not the case. That is, if degree comparisons are allowed, it does not mean that the standard marker necessarily selects for degrees. The possibility of type-shifting cannot be eliminated and whether the standard marker selects for degrees or individuals would be indeterminate. Given

[4]See Alrenga, Kennedy & Merchant (2012) for an example of what theoretical impetus would justify this kind of analysis.

the analyses put forward at the end of the last chapter, we would expect both constructions to be compatible with degree comparisons, but as previously reported data already indicates, the BEAT-construction may need some additional support in order to be able to do so.

3.2.3 Relationship to the positive form

The third test for looking at how degrees interact with the two constructions under investigation involves confirming whether the standard of comparison supplies a degree or simply manipulates the contextual standard in a given construction by examining the relationship between the comparative predicate in that construction and the positive or negative form.

The positive form refers to the use of a gradable property in a simple declarative. For example, (3.19) would be the positive form of *tall*.

(3.19) Positive form of *tall* in English

John is tall.

This positive form is evaluated with respect to *norm-relatedness*,[5] meaning that some contextually supplied norm is used for evaluating the meaning of the utterance. In the case of *tall*, the contextually supplied norm would typically be the average height of the relevant comparison group in question.

Notice that the English canonical comparative neither implies nor entails the positive form for either the comparee or the standard of comparison with respect to the comparative predicate (3.20).

(3.20) Comparative form of *tall* in English

a) John is taller than Joe. $\not\Rightarrow$ John is tall.

b) John is taller than Joe. $\not\Rightarrow$ Joe is tall.

[5]The term norm-related goes back at least to Bierwisch (1989).

If one asserts the truth of (3.20), one is not simultaneously asserting the truth of (3.19). You can truthfully claim (3.20), even if John (or Joe, for that matter) is quite *short*. The comparative construction in this case is evaluated without respect to norm-relatedness, or without reference to a contextually-determined standard. The norm for that predicate, that is the norm of people's heights, is irrelevant for the interpretation given to the comparative in this case.

Another concern is whether a construction induces anti-norm-relatedness, that is has a negative implicature to the positive form. This happens with English implicit comparisons (3.21), which are argued to manipulate the contextually supplied standard rather than to introduce a degree into the computation for comparison (Kennedy 2007).

(3.21) Example of English implicit comparison

Compared to Lee, Kim is tall. (Kennedy 2007)

The English implicit comparison does not imply the positive form (3.22), but does have an anti-norm-relatedness reading (3.23) (Kennedy 2007 crediting observation to Sawada 2007).

(3.22) Example of English implicit comparison lacking norm-relatedness reading

That essay isn't long, but it's long compared to this one. (Kennedy 2007)

(3.23) Example of English implicit comparison receiving anti-norm-relatedness reading

?? That essay is long compared to this one, and it's already quite long. (Kennedy 2007)

In the *compared-to* construction in (3.22) and (3.23), the norm-related reading that the essay is long, that is is above the norm with respect to length, is not only not required, as can be seen by (3.22), but is not even available, as is demonstrated by (3.23). That is, it receives an anti-norm-relatedness reading. The presumption is that in the normal case, the essay would not count as long. This is taken as evidence

that the contextual standard has been manipulated by the construction; it resets the norm for the predicate, impacting what the standard function, which reaches into the context, returns. If the standard of comparison were directly contributing a degree to the construction for evaluation, no inferences about the actual length of the essays would hold as the only relevant fact would be whether the degree of one essay exceeded that of the other.

Ascertaining whether either construction induces a(n) (anti-)norm-relatedness reading is an important first step for determining the truth-conditions that apply to each construction, which in turn should help us to develop their respective semantics. In particular, knowing whether a given construction induces a(n) (anti-)norm-related reading should tell us whether the construction builds off of the semantics of the positive form in some manner, whether it manipulates the contextual standard, or if it is capable of introducing a true standard of comparison into the construction.

First, however, it is important to understand that additional factors of scale structure are known to impact the relationship of the positive and comparative forms. Several sub-classes of gradable properties, such as evaluative predicates and certain absolute standard predicates, bring about a norm-relatedness reading in the comparative form for many speakers.

That some sub-classes of gradable properties can bring about a norm-relatedness reading in the comparative has been established for some time (at least since Bierwisch 1989). In particular, Bierwisch (1989) claims that evaluative predicates involving speaker judgment, such as *stupid* (3.24), induce such norm-related readings in the comparative.

(3.24) English evaluative predicate inducing norm-related reading in comparative

Fritz is more stupid than Hans.

Implies (or presupposes): Both Fritz and Hans are stupid.

(Bierwisch 1989: 81)

These evaluative predicates differ from the previously considered predicate *tall* in that 1) they cannot be associated easily with a number line, and 2) they imply the speaker

is making a judgment, or evaluation that something is either *good* or *bad*. In this case, listeners tend to assume that the individuals involved in the comparison are above the norm for the dimension of the comparative predicate, *intelligence*, though because the predicate *stupid* has a negative ordering along that scale, they are above the norm with respect to lacking *intelligence*. In other words, listeners assume the items or individuals involved in the comparison are *stupid*. However, it is the subclass of the predicate involved in the construction and not the comparison construction itself that is responsible for this reading.

In addition to evaluative predicates, Kennedy & McNally (2005) have noted an even stronger tendency for so-called absolute standard predicates with a minimum standard, like *wet*, to give rise to what we might consider norm-related judgments like (3.25).

(3.25) English absolute, minimum standard predicate inducing norm-relatedness in comparative

#The gray shirt is wetter than the green one because the green one is actually dry.

These minimum standard absolute predicates are different from both the previously considered evaluative predicate *stupid* and the first predicate in this section, *tall*. The minimum standard absolute predicate differs from the evaluative predicate in that there is no implication of judgment by the speaker about the *goodness* or *badness* of the predicate. The minimum-standard absolute predicate differs from predicates like *tall* in that 1) its associated scale has a referenceable endpoint, as evidenced by the predicate's compatibility with modifiers such as *100%* (3.26), and 2) it need only have a little of the property, in this case *wetness*, in order for the predicate to be truthfully applied (3.27).

(3.26) Absolute predicates

This sponge is 100% wet.

This person is 100% tall.

(3.27) Minimum standard predicates

This towel has a little bit of water on it; therefore, it is wet.

This person has a little bit of height; therefore, they are tall.

In this case, comparison with the minimal standard predicate (3.25) leads to the implication that the two individuals being compared would independently count as *wet*. That is, we relate the items to the norm for being *wet*.

However, in both the cases involving evaluative predicates and those involving minimum standard predicates, it can be shown that it is the sub-class of gradable property that serves as the comparative predicate and not the comparison construction itself that induces the norm-relatedness readings. And that is our concern.

Bearing these complications in mind, the point remains that it is important to determine whether the two comparative constructions show any differences with respect to norm-relatedness readings in a manner that suggests the construction itself is responsible. If the structure of the construction itself rather than the (sub)structure of specific lexical items gives rise to (anti-)norm-relatedness readings, then that will tell us the construction most likely manipulates the contextual variable of the positive form rather than forming an explicit comparison that introduces a degree associated with the standard of comparison.

As noted in §1.2.5, the only apparent claim in the literature concerning norm-relatedness and either of the two constructions under consideration is that the BEAT-construction generally does not exhibit norm-relatedness, excepting when the comparative predicate is TALL (Wilbur et al. 2018). However, as we saw above tall is exactly the sort of predicate that is not expected to license norm-relatedness in a comparative construction. Furthermore, the two examples provided as evidence that the construction does not involve norm-relatedness involve what are probably an evaluative predicate (STUPID) and a maximum-standard absolute predicate (CLEAN). Maximum-standard absolute predicates behave similarly, though not exactly, like minimum-standard absolute predicates like *wet*. That is, the examples involve exactly the sorts of predicates that we would expect to result in norm-relatedness readings,

given that these predicates are of the same type as their English translations. This suggests that either the context already licensed departure from norm-relatedness or that there is something else going on with the construction that requires further explanation. This study will seek to further verify the status of norm-relatedness readings with respect to the BEAT-construction as well as to establish the facts concerning the MORE- construction.

With the BEAT-construction, this is of additional concern because initial piloting for the current study suggested that the BEAT-construction may actually exhibit norm-relatedness. In particular, in situations involving comparison between two things that were clearly on opposite ends of a given scale, the formation of BEAT-constructions were frequently deemed weird even though no such comment would be made about employing the MORE-construction to describe the exact same scenario. For example, it was deemed weird to use the BEAT-construction to compare Jack and the Giant from the story Jack and the Beanstalk when Jack was described as 4' 8" and the Giant as 10' tall. Even if the BEAT-construction does not induce (anti-)norm-relatedness, it may impose some kind of restriction on the differential gap between the comparee and standard.

In order to move towards resolving some of these issues and to test the norm-relatedness of both constructions, this study made use of a picture-description task. Signers were asked to indicate which items could felicitously be used as the standard of comparison in each construction based on the picture provided. The task was designed with several factors concerning scale structure, perceptual biases, and ease of response in mind.

In order to control for the comparative predicate, the task involved describing various siblings' birth weights, a dimension that can easily be associated with a number line. This helped ensure interpretation of the predicate was uni-dimensional and therefore less likely to be subject to much inter-speaker variation with respect to what additional implications could be drawn. (See Solt 2018 for discussion of how evaluative, multi-dimensional, and minimum standard predicates do tend to be sub-

ject to such inter-speaker variation.) In other words, it would help ensure that if norm-relatedness was found, it could largely be attributed to the construction itself and not the comparative predicate involved.

The scale was furthermore pre-defined based on medical statistics in order to make it more likely that signers would agree on what counted as a large or small birth weight.[6] Weights were presented in kilograms rather than the more culturally familiar pounds and ounces in order to achieve two ends. The first reason was that this allowed for five numerically even steps to be created along the scale: one average, one definitely large, one definitely small, one between average and large, and one between average and small. Having the steps be numerically even in distance was important for trying to prevent psychological perception of numbers from impacting application of the scale. The second reason for using kilograms was to help further remove signer's individual experiences from influencing their perceptions as to what constitutes large and small birthweights. Again, it was hoped that this would create a more consistent application of the scale.

Signers were shown a picture of the children being described along with the children's associated weights and a visual reminder of the scale for what constitutes large and small birthweights. The picture was selected to depict grown children of roughly equal size in an attempt to further minimize inadvertent perceptual biases from impacting application of the predefined scale. An example of one of the picture task is items shown in 3.1. As can be seen from the picture, each child was furthermore assigned a name. Names were deliberately chosen to be short in order to allow for easy fingerspelling. Each name also began with a different letter in order to facilitate initialization and/or creation of namesigns should signers so prefer.

For each construction, signers were asked to indicate which children could be used as the standard of comparison given that the child whose name was bolded was the comparee. For instance, in conjunction with the image in Figure 3.1, signers were

[6]Medically defined, average birth weight is 3.2 kg while a large newborn weights more than 4.0 kg (above the 90th percentile) and a small newborn less than 2.5 kg (below the 10th percentile).

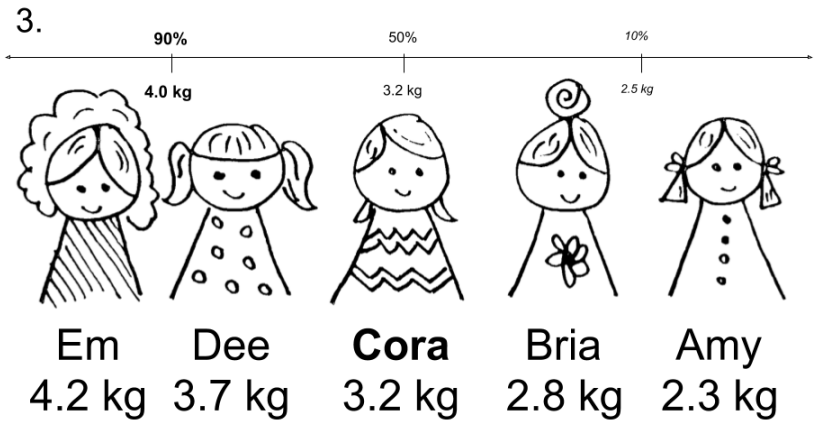


Figure 3.1.: Example of norm-relatedness picture task

asked which children could be used to fill in the blank for the utterance C-O-R-A BEAT ___ BIG .

If either construction induces a norm-relatedness reading, then we would anticipate that none of the provided cases would be judged felicitous, or perhaps only cases involving Em (4.2kg) as the comparee. If anti-norm-relatedness readings are induced, we would also anticipate that none of the provided cases would be judged felicitous, or perhaps only cases involving Cora and/or the children to Cora's right. On the other hand, if no (anti-)norm-relatedness is involved in the interpretation of a given construction at all, then we would expect signers to select all of the children to the right of whichever child is serving as the comparee–so Dee (2.8kg), and Em (2.3kg) in the case presented in Figure 3.1.

3.2.4 Subcomparatives

The next test concerning degrees is the subcomparative (3.28), wherein the degrees of two distinct dimensions are compared to one another.

(3.28) English subcomparative

The door is taller than it is wide.

These kinds of comparisons are argued to require degrees and so any grammaticality judgments accepting them would prove that the construction involved contained them. Furthermore, as noted in §2.2.2, such constructions are cross-linguistically seem to be restricted to languages that have clausal comparisons and direct measure phrases available.

Because subcomparatives involve two distinct scales, it is generally assumed that they involve clausal, or degree-type comparisons. (See Beck et al. 2009, Kennedy 2007, and Kennedy 1997, among others, for a more in-depth overview of the test and argumentation concerning its relevance for the structures under consideration.)[7] They are generally accepted to require predicates that are commensurate with each other, meaning they have dimensions that can be measured in the same manner. Something like (3.29) would not be expected to go through as there is no dimension that can be measured in the same manner across the two predicates.

(3.29) Incommensurate subcomparative

?The candle is brighter than it is wide.

The dimensions of luminescence and length supplied by *bright* and *wide*, respectively, share no relevantly similar method for measurement; they are incommensurate. In the earlier example (3.28),*tall* and *wide* are acceptable because they can both make use of the dimension of *length*, though the former on its own specifies that the *length* be vertical and the latter that it be horizontal.

Even in a language where subcomparatives are generally accepted in the literature as grammatical, such as English, these constructions have been observed to be more marginal on the relevant reading in out-of-the blue utterances and tend to instead receive a metalinguistic reading. This is the reading of *It is more accurate*

[7]Alrenga & Kennedy (2014) shift the focus of subcomparative licensing onto a measure phrase in part due to the observation in Beck et al. (2009) that subcomparatives cross-linguistically pattern with the licensing of measure phrases. However, the denotation Alrenga & Kennedy (2014) give the subcomparative licensing morpheme still presupposes a clausal comparative. In any event, the analysis still relies on the presence of degrees in the construction.

to say x is smart than it is to say that y is friendly. Furthermore, there are conflicting reports in the literature regarding whether subcomparatives can be formed with multi-dimensional and/or evaluative predicates, such as *smart* or *friendly,* even if the authors otherwise agree on the existence of subcomparatives in the language. Kennedy (1997), for example, talks about such comparisons as if they are always metalinguistic, whereas Bale (2011) takes for granted that comparison of extents is a viable reading.

(3.30) English example of contested subcomparative

J. is more intelligent than they are wise.

Metalinguistic reading: 'It is more appropriate to call J. intelligent than it is to call J. wise.'

Subcomparative reading: ?¿The extent to which J. is intelligent exceeds the extent to which J. is wise.' or 'J's intelligence exceeds their wisdom.'

All of this is to say, it would not be surprising if a language that otherwise allowed subcomparatives did not allow for this particular type of subcomparative or if consultants were conflicted about what interpretations are available.

As with both comparisons of degree and degree differentials, there are some initial reports regarding these constructions in ASL for both the MORE- (3.31) and the BEAT-construction (3.32).

(3.31) Initial reports of ASL MORE-construction subcomparative

$_j$TABLE WIDE, $_i$DOOR HEIGHT, IX$_j$ WIDTH MORE THAN IX$_i$ HEIGHT

'The table is wider than the door is tall.' (Wilbur et al. 2018)

(3.32) Initial reports of ASL BEAT-construction subcomparative

*$_i$DOOR HEIGHT, $_j$TABLE WIDE $_{(j)}$BEAT$_i$

'The table is wider than the door is tall.' (Wilbur et al. 2018)

However, Kentner, Wood & Wilbur (2020, June), which relies on data collected in service of this project, note that signer judgments are actually quite variable with respect to subcomparative formation, instead reporting data like (3.33) and (3.34).

(3.33) Further reports of ASL MORE-construction subcomparative

✓/*DOOR A TALL MORE (THAN) DOOR B WIDE

'Door A is taller than Door B is wide.' (Kentner, Wood & Wilbur 2020, June)

(3.34) Further reports of ASL BEAT-construction subcomparative

✓/*DOOR A TALL BEAT DOOR B WIDE

'Door A is taller than Door B is wide.' (Kentner, Wood & Wilbur 2020, June)

Furthermore, Sandra Wood reports (p.c.) that BEAT-constructions are often accepted by signers if BEAT agrees with a location that appears to be co-indexed with the outer extent of the door. What, exactly, all of this means will have to be held for discussion until we have reviewed the results for this study; however, it gives us an idea of what to expect.

When it comes to interpreting the results, acceptability of subcomparatives with a construction will be taken as evidence that the construction involves degrees in its derivation. The extent to which acceptance of subcomparatives will be seen as evidence that the construction allows clausal, or degree-type comparatives, will be determined by examining how results for this test comport with the results of other tests designed to probe for the selectional properties of the standard marker that we will introduce in §3.3, but subcomparatives are typically associated wtih clausal, or degree-type comparisons.

3.2.5 Degree modification

Besides using degree differentials, degree comparisons, norm-relatedness, and subcomparatives, we will also be looking at various degree modifiers.[8] If we try to use

[8]There are various terms in the literature with overlapping meaning. In some cases "degree modifier" is used to refer to modifiers of noun phrases that qualify the extent to which the noun phrase applies, such as in *sort of a gentleman*–the reading is close to that of quantification (Traugott 2008). Here, I use the term broadly to mean anything that appears to modify degree morphology. These also sometimes go by the names degree adverbials or intensifiers, among other terms, depending on both the tradition and exactly what lexical items are under consideration. Stratton (2020) has some good notes on some of the various terms in use. (To muddy the waters even further, intensifier is also

degree modifiers that require the semantics of *pos*, such as *very*, the result should be ungrammatical (3.35) since *pos* and any comparative morphology should be competing to exist in the same degree head.

English *very, for example, is analyzed by Kennedy & McNally (2005)* as raising the contextual standard supplied by *pos*, which makes it incompatible with the English canonical comparison of superiority as the standard is supplied directly and cannot be raised (3.35).

(3.35) Incompatibility of *very* with English canonical comparative of superiority

a) John is very handsome.

b) *John is very more handsome than Joe.

c) *John is more handsome very than Joe.

d) *John is more very handsome than Joe.

The null degree morpheme *pos* and the overt degree morpheme *more* cannot co-exist. They are in direct competition for the same (functional) projection, for the degree head. The degree modifier *very*, however, is analyzed as raising the standard. This requires the semantics of *pos*, which utilizes a contextually supplied standard that can be raised. You can raise the relevant standard for what counts contextually as *handsome*. However, *very* is incompatible with the semantics of *more*. You cannot raise the extent to which *Joe* is handsome.

Part of the difficulty of applying this kind of test is that it relies on distributional facts regarding classes of morphemes and their relationship to other classes of morphemes. English *very*, even if we believe it to have a different semantics than that sketched out above, is clearly established as not compatible with overt degree morphology such as *more* or *too*. However, there is a set of adverbials like *really* that at first glance appears to manipulate a degree variable in the same way as *very* (3.36)–that is, which appear to have a similar semantics; however, the two sets of

sometimes used in other parts of the literature to refer to emphatic uses of reflexive pronouns, such as in Siemund (2000).)

adverbials show different distributional behavior with respect to comparative constructions (3.37).

(3.36) Similar behavior of English *very* and *really*

a) John's very tall.

b) John's really tall.

(3.37) Differences in behavior of English *very* and *really*

a) *John's very more handsome.

b) John's really more handsome.

c) *John's more very handsome.

d) *John's more really handsome.

This illustrates the importance of considering not just the compatibility of the standard marker or comparative predicate with modifiers of gradable properties, but to test the distribution of different types of modifiers of gradable properties.[9]

With respect to ASL, this means being particularly careful about assuming that morphemes that are reported to have a meaning comparable to *very* actually share the same distribution as *very*. Specifically, the *intensive aspect* reported in Klima & Bellugi (1979) cannot be assumed to behave in the same manner. *Intensive aspect* refers to a bound inflectional morpheme that manifests in how the sign is physically produced. It carries a meaning close to English *very* and causes the sign to be made in a 'tense' manner that is even, tense, end-marked, fast, and elongated (Klima & Bellugi 1979: 265-266).

Since rough translation to *very* is not enough to ensure a test item requires the competing degree morpheme *pos*, this study will test both this *intensive aspect* (3.38)

[9]I am currently unaware of any formal semantic analysis of English *really* in the literature, though it is likely one exists. My own native speaker intuitions suggest *really* may somehow modify the gap in extents, indicating that the gap is greater than would otherwise be expected. This would allow it to be compatible with *pos* by modifying the gap between the contextually supplied degree and the degree of the item. It would also be compatible with the semantics of *more* in this case.

and the separate lexical sign, Y-OO (3.39), which is signed using a Y-handshape (a fist with the thumb and pinky extended), tracing at least two circles in front of the face and which also seems to have a meaning that appears to be roughly translatable as *very*.[10]

(3.38) Example test item for degree competition with *pos* using *intensive aspect* and MORE

EVA MORE SMART$_{intensive}$ THAN BRUNO

Intended: 'Eva's more very smart than Bruno.'

(3.39) Example test item for degree competition with *pos* using Y-OO and MORE

a) EVA Y-OO MORE SMART THAN BRUNO

Intended: 'Eva's really more smart than Bruno.'

b) EVA MORE Y-OO SMART THAN BRUNO

Intended: 'Eva's more really smart than Bruno.'

c) EVA MORE SMART Y-OO THAN BRUNO

Intended: 'Eva's more smart really than Bruno.'

Importantly, interpretation of the results for this set of tests will require taking the distribution of the aspectual morpheme (*intensive aspect*), the independent lexical sign (Y-OO), and each construction into account. If there is a difference in distribution, whether between the two constructions or between the two types of modifiers, we may have additional, if weaker, evidence for the presence of a degree head apart from *pos* (and for its location in the derivation) in at least one of the constructions. However, if the distribution patterns are the same across the board, particularly if

[10]Additional candidates previously identified as at least sometimes having a meaning similar to English *very* are AWFUL, WOW, and STRONG. Early piloting suggested that STRONG was actually a marker of tendency rather than of degree. Of the remaining, Y-OO was selected over WOW mostly to control the size of the present study. Selection over AWFUL, however, was driven by the concern of being able to disambiguate the negative and positive speaker judgments that sometimes seemed to be associated with AWFUL and because early piloting also suggested that Y-OO and WOW were more likely to target some sort of quantification-like thing than AWFUL. Early piloting also suggested that AWFUL might be sensitive to subclasses of gradable predicates in some undetermined way. Note, all of these findings were highly preliminary and need further investigation.

both *intensive aspect* and Y-OO are permissible in all cases, we will not necessarily have evidence for a lack of degree heads in either of the two constructions under consideration.

3.2.6 Interpretation of tests for presence and location of degrees

To review and condense for easier reference, the interpretations for the various tests laid out in this section for determining the presence and location of degrees are as follows:

1) If degree differentials are judged grammatical for a construction, then the construction should have degrees available at some point in its derivation, whereas incompatibility with degree differentials indicates the construction does not involve (multiple, explicit) degrees.

2) If degree comparisons are permitted, then in the least, the language has degrees available and degrees are furthermore likely involved in the construction under consideration.

3) If the comparative construction under consideration induces (anti-)norm-relatedness readings, then restrictions will emerge as to which children to the right of the comparee in the picture description task can be used as the standard of comparison. Restrictions may also emerge as to which children can serve as the comparee.

4) If subcomparatives are possible for a given comparative construction, then it definitely involves degrees.

5) If differences in distributional patterns concerning modifiers with meanings similar to *very*, namely *intensive aspect* and Y-OO, emerge, particularly if they are disallowed as modifiers of the comparative predicate in a comparison construction, then there is evidence for the presence of degrees in the construction.

Note that this set of tests, perhaps more than the others laid out in this study, mostly relies on assumptions that the syntax-semantics interface is largely decompositional and that variables manipulated in the semantics need a way to be accessed via the syntax. (For more discussion on various iterations of (de)compositional approaches, the reader is referred to the first chapter of Beavers & Koontz-Garboden 2020 and references therein.) However, there are ways to model the semantics and the syntax that do not require such assumptions. (See, for instance, how Champollion 2015 handles cases involving events without requiring some of the variables be directly open but nevertheless be modifiable.) For our current purposes, these issues are less important than the ability to examine ways the two constructions under consideration may feasibly be similar to or different from one another, which is something the predictions laid out allow us to do. I trust that the results can be recast into other models in meaningful ways.

3.3 Selectional properties of the standard marker

The last question for our study more directly addresses the selectional properties of the standard marker. In particular, we should like to know whether the standard marker selects for clausal or phrasal standards of comparison. To accomplish this, we use time adverbials, the previously introduced test of WH-doubling, and wh-island tests.

Time adverbials to test for presence of a clause in standards of comparison

The first test we will use for probing the structure of the standard of comparison is time adverbials. This test should give us an initial indication of whether anything resembling a clause is ever present in the standard of comparison to begin with before

we then test for the presence of covert wh-operators that would indicate a degree-type comparison.[11]

Generally speaking, clauses contain tense phrases, which serve as the site of adjunction for time adverbials like *yesterday* or *five years ago*. If either construction can take a standard of comparison that contains a clause, then we would anticipate that the tense phrase inside that clause can be modified by a time adverbial. Therefore, items such as that in (3.40) will also be included to help determine the composition of the standard of comparison for both constructions.

(3.40) Example time adverbial test item

M-A-R-Y (TALL) BEAT (TALL) 5-YEAR-PAST

Intended: Mary beats herself with respect to tallness 5 years ago.

If a time adverbial can be used to modify the standard of comparison, then we will have evidence that the standard of comparison may involve a clause in at least some cases, but will need further verification to see if it can be a comparison of degrees, that is whether it contains a covert wh-operator.

How to interpret cases where a distinct temporal adverbial cannot be associated with the standard of comparison depends in part on our theory of comparative deletion. It is generally accepted that deletion of the second predicate in degree (clausal) comparisons is obligatorily deleted (at least for languages like English).

(3.41) Comparative deletion in English

a) John is taller than Joe is.

b) */?John is taller than Joe is tall.

There are different ways this can be dealt with,[12] but for our purposes, it will suffice to point out that the facts for English are such that distinct time adverbials can be associated with both the comparee and the standard (3.42).

[11] ASL does not have overt copula signs, so tests to see if there is any equivalent to *John is taller than Joe is* that would also suggest the presence of a clause are unavailable.

[12] For a good overview of this issue, I refer the reader to Lechner (2004).

(3.42) English canonical comparison with two time adverbials

He is (even) more handsome now than (he was) five years ago.

This is to say, if a distinct temporal adverbial cannot be associated with the standard of comparison, we will at least have evidence that the construction differs in a significant manner from that of what appear to be English clausal degree comparatives, and for now will also assume that it is evidence the standard of comparison is (more likely) obligatorily phrasal while acknowledging the fact that additional evidence, for instance of language-specific differences with respect to elision processes, could require a different interpretation of the results.

3.3.1 WH-doubling tests for selectional properties

As previously mentioned in §3.1, the WH-doubling test may provide some preliminary evidence concerning the selectional properties of the standard marker and the presence of covert operators. Specifically, if the comparee can be doubled but not the standard of comparison (independent of each other, not jointly), then the standard of comparison may be inside a syntactic island, possibly indicating that the standard of comparison is clausal. However, as previously noted, there may be other movement violations that result in ungrammaticality.

Besides the fact that movement violations not pertaining to the presence of a wh-operator may limit the interpretive power of this test, if a degree-type comparison can optionally take phrasal standards of comparison as discussed in the previous chapter, then we will still need further testing to determine whether the standard marker is *optionally able* to take a clausal standard of comparison containing a wh-operator.

Question-embedding predicates to test for presence of operators

One way to further probe whether the standard marker can optionally take clausal standards of comparison containing a covert wh-operator is by determining whether or not embedded-question predicates, such as *wonder*, induce wh-island effects when

placed in the standard of comparison. For example, it has been observed that clausal standards of comparison in English are subject to constraints associated with wh-islands (see, among others, Chomsky 1977, Bresnan 1973), as can be seen in (3.43), and have been analyzed as involving wh-movement and a covert operator (Chomsky 1977).

(3.43) English wh-island effects in equatives

a) Mary isn't the same as she was five years ago.

b) *Mary isn't the same as a I wonder whether she was five years ago.

(Chomsky 1977: 87)

The ungrammaticality of (3.43 b) is taken as evidence that there is a covert operator within the standard of comparison for the equative construction. This covert operator is competing for the position filled by the wh-word *whether*.[13] While the example in (3.43) involves equatives, we see the same pattern in comparisons of superiority as well (3.44).

(3.44) English wh-island effects in comparisons of superiority

a) Mercury is closer to the sun than I thought it was.

b) *Mercury is closer to the sun than I wondered whether it was.

c) *Mercury is closer to the sun than I knew who said it was.(Kennedy 1997)

The minimal difference between (3.44 b and c) and (3.44 a) is the presence of a wh-element intervening between the (deleted) predicate in the standard marker *than*.

Similar facts are also given as part of the argument that there are phrasal as well as clausal comparisons in English as examples like (3.45 a) minimally contrast with (3.45 b).

[13] *Whether* does behave syntactically as a wh-word and has a distinct distribution from the conditional *if* that sometimes follows *wonder* in English. Compare *Lisa wonders how to win* and *Lisa wonders whether to win* with **Lisa wonders if to win* (Larson 2010).

(3.45) English comparative question with wh-extraction from *than*-phrase

a) Kim doesn't know who$_1$ Lee is taller [$_{pp}$ than t_1]

b) *Kim doesn't know who$_1$ Lee is taller [$_{pp}$ than [$_{cp}$ t_1 is]]

(Kennedy 2007)

The supposed minimal difference between (3.45 a) and (3.45 b) is the presence of the tense bearing existential predicate *is*. It is assumed that the former involves a phrasal comparison and the latter a clausal one, explaining why the latter has a covert operator that results in a wh-island violation (here the operator is competing with the wh-word *who*) and results in ungrammaticality.

All of this means that wh-island tests involving question embedding predicates may be able to help corroborate initial findings of the time adverbial and WH-doubling test and provide further indications of the composition of the standard of comparison.

With respect to applying these tests in ASL, the first question is whether the language exhibits such wh-islands. It has been reported that there are at least some cases of A' movement that are sensitive to wh-island constraints, such as focus doubling (Petronio 1993), and that there are others, such as topicalization, which can rescue movement violations through resumptive pronoun usage and/or agreement on the embedded predicate (Lillo-Martin 1986). And though some work has been done on question embedding predicates (Petronio & Lillo-Martin 1997),[14] particularly with respect to word order within the embedded clause, to the best of my knowledge, no one has looked at them specifically as they pertain to wh-island constraints in ASL nor has anyone used them to test for covert operators in ASL before.[15]

What all of this means is that, while it should be possible to replicate the tests used in the above English examples, two important details will need to be borne in mind. Firstly, the predicates will need to be what are referred to in the literature as "plain,"

[14]Liddell (1980) also discusses predicates that take clausal complements and/or indirect questions, but most of the latter type reported, like ASK, optionally take an indirect question as a complement.
[15]There are discussions in both Petronio & Lillo-Martin (1997) and Neidle et al. (2000) about extraction from embedded clauses of predicates like THINK, but not about question embedding predicates like WONDER.

(Padden 1983) that is, predicates in ASL that do not show morpho-phonological agreement with subject, object, source, or goal. This is to prevent agreement (presumably as a form of resumptive pronoun usage) from rescuing an otherwise ill-formed constructions.

Secondly, additional items focusing on wh-extraction from a dependent clause embedded under either a question embedding predicate (3.46) or (semi-)factive predicate (3.47) will need to be collected to examine whether wh-island violations occur as anticipated so that the results can be properly interpreted.

(3.46) Example item for wh-island test with question-embedding predicate

$\overline{\text{IX-1 WONDER WHO SMART}}^{\text{whq}}$

*Intended: *Who did I wonder whether they were smart.*

(3.47) Example item for wh-island test with (semi-)factive predicate

$\overline{\text{IX-1 THINK WHO SMART}}^{\text{whq}}$

Intended: Who did I think was smart?

If the wh-island test holds for ASL, then we expect items like (3.46) to be ungrammatical but for items like to (3.47) be grammatical. This is because we anticipate the former to involve an attempt to doubly-fill the spec C of the embedded clause. The first attempt to fill it should be the result of the question embedding predicate WONDER coming with a (covert) question complementizer (WHETHER) and the second attempt should be from positing a question about who is thought to be smart. However, the latter construction should be grammatical as THINK is not believed to bring a question complementizer with it, therefore avoiding the problem altogether. If (3.46) is not judged to be ungrammatical or (3.47) is not judged to be grammatical, then we will know the test did not work as intended.

Provided our baseline items show the appropriate wh-island effects obtain, then placing a question-embedding predicate (3.48) and a (semi-)factive predicate (3.49) within the standard of either the BEAT- or the MORE-construction should provide us

further evidence about whether the standard of comparison may be clausal and if so, whether there are any covert operators present.

(3.48) Example item for wh-island test with question-embedding predicate in standard of comparison of ASL BEAT-construction
M-A-R-Y (TALL) BEAT IX-1 WONDER (TALL)
Intended: Mary (is tall.) She beats what I wondered (with respect to her tallness).

(3.49) Example item for wh-island test with (semi-)factive predicate in standard of comparison of ASL BEAT-construction
M-A-R-Y (TALL) BEAT IX-1 THINK (TALL)
Intended: Mary (is tall.) She beats what I thought (with respect to her tallness.)

In particular, both may be judged ungrammatical if the standard of comparison must be phrasal. However, if the standard may be a clause, but involves no bound degree variable, then we expect both to be grammatical. However, in the case of a wh-operator within the standard of comparison, that is a degree-type comparison, would we expect (3.49) to be grammatical and (3.48) to be ungrammatical. That is we expect a contrast between the (semi-)factive embedding predicate and the question-embedding predicate.

3.3.2 Interpretation of tests for selectional properties

To review, results from the set of tests designed to inform us about the composition of the standards of comparison will be interpreted as follows:

1) If a time adverbial can be used to modify the standard of comparison, then the standard of comparison can contain a clause (though may not be a clausal standard of comparison in the relevant sense). However, if a time adverbial

cannot be used to modify the standard of comparison, then it is most likely phrasal.

2) If doubling of the comparee succeeds, then if doubling of the standard of comparison succeeds, the standard is allowed to be phrasal whereas if it fails, then the standard of comparison has committed some kind of movement violation, possibly due to being within a dependent clause with a covert operator.

3) Provided question-embedding predicates induce wh-island effects:

    a) If neither a (semi-)factive- nor question-embedding predicate can be placed in the standard of comparison, then the standard of comparison is most likely obligatorily phrasal.

    b) On the other hand, if a semi-factive predicate but not a question-embedding predicate can be placed in the standard of comparison, then the standard of comparison is at least sometimes clausal with a covert operator.

3.4 Tests concerning standard of comparison excluded from present study

It is frequently as important in detailing a study to lay out both the negative and the positive decisions made in order to establish a record that can provide adequate guideposts for future research. To that end, I take the time here to discuss tests that are well-established in the comparative literature for determining information about the composition of the standard of comparison that were nevertheless excluded from use in this particular study. Ideally, we would also be able to ascertain whether there is any evidence for quantification of degrees or the presence of covert negation of some sort within the standard of comparison as we saw in 2.2.2. In particular, tests involving quantifier and modal interactions, tests involving negative polarity items, and tests involving negative islands were considered but ultimately left out of the current project for reasons concerning language-specific facts and/or a lack of foundational research necessary for the accurate interpretation of the test under

consideration. It is hoped that detailing the tests and the current difficulties in applying them facilitates future research in this area.

3.4.1 Scope test for quantification

The first test considered but not used in this study for further determining the composition of the standard of comparison involves the interaction between modals and quantifiers over degrees. The reason mostly comes down to (lack of) ASL-specific facts regarding both quantification and modals.

A common test in the cross-linguistic literature on comparatives (Beck et al. 2009) and within the discussion of whether/which comparatives use quantification over degrees involves the scopal interaction of a differential phrase and a modal in a construction like (3.50).

(3.50) English scope interaction between modal and degree quantification

Context: Your friend asks you how long their book needs to be. You point to a nearby book that is 25 pages long.

Utterance: Your book has to be exactly 5 pages longer than that.

(see Heim 2000 and Beck et al. 2009)

Such interactions reportedly give rise to the two interpretations in (3.51).

(3.51) Reported scope effects between modals and standard of comp. in English

a) Your book has to be at least 30 pages.

b) Your book has to be no more and no less than 30 pages.

(see Heim 2000 and Beck et al. 2009)

These two interpretations rely on the question of whether the modal (*has to be*) scopes over the differential (*5 pages longer*), that is whether it has the surface word order interpretation shown in (3.51 a), or whether the differential scopes over the modal, that is whether a standard effect from quantifier raising is available to give rise to the

interpretation shown in (3.51 b). The ability of the degree differential to scope over the modal (the interpretation in (3.51 b)) is important because it is taken as evidence that such constructions involve quantification over degrees.

However, there are two distinct problems with trying to parlay this test into ASL given the information that is currently available. Firstly, it is not well established whether ASL displays the effects of covert quantifier raising that the test in (3.50) depends on or whether ASL instead has rigid scope. Secondly, ASL modals are reported to overtly move in order to have surface order match the scope of the intended reading (Wood 1999, Shaffer 2004, Wilcox & Shaffer 2006).

Generally speaking, some languages, such as English, exhibit what is referred to as scopal ambiguity while others, such as Mandarin,[16] are argued to have rigid scope. Scopal ambiguity means that there are two possible interpretations for items such as (3.52), which contains two quantified phrases, *a shark* and *every pirate*.

(3.52) Scopal ambiguity in English

A shark attacked every pirate.

a. Surface scope ($\exists > \forall$):

There was a single shark that attacked multiple pirates.

b. Inverse scope ($\forall > \exists$):

For each pirate, there was a (different) shark that attacked him.

(Scontras et al. 2017)

In the first interpretation where there is only one shark involved, we say that the quantified phrase *a shark* scopes over the phrase *every pirate*. In the second interpretation where there is a single shark per pirate, we say that *every pirate* scopes over *a shark*. Such scopal properties may also be found in the interactions of other elements, such as modals and negators, with quantifiers. Therefore, the presence of similar scopal ambiguities, such as that seen at the outset of this section in (3.50) and (3.51), is frequently taken as evidence that covert quantification is involved. That is, scopal ambiguities are evidence for specific underlying structures.

[16]See Scontras et al. (2017) and therein for more on how Mandarin handles double quantification.

However, in some languages such scopal ambiguities do not seem to be possible and only the reading that matches the surface word order is permitted. Mandarin, for instance, is argued to be such a language (3.53).

(3.53) Rigid scope in Mandarin

You	*yi-tiao*	*shayu*	*gongji-le*	*mei-yi-ge*	*haidao.*
exist	one-clf	shark	attack-pst	every-one-clf	pirate

'A/one shark attacked every pirate.' (Scontras et al. 2017)

Unlike the English counterpart, (3.53) only allows for the interpretation where there is a single shark responsible for the attack on all the pirates. In such cases, we say that the language has rigid scope. In general, we would not expect the test shown earlier in (3.50) to work in a language with rigid scope as the assumptions the test relies on to begin with fail to hold in such a language. Lack of ambiguity in such cases would not necessarily indicate the lack of quantification over degrees.

With respect to ASL, the facts concerning quantification scopal ambiguities are not well-established. Both Quer & Steinbach (2015) and Abner & Wilbur (2017) do agree, however, that ambiguity is rare, largely because of the language's ability to make use of space to make scope relations clear. For example, while the English utterance *Ann gave the students a book* is ambiguous as to whether the teacher gave the students a single book to share or whether the teacher gave each student their own book, the ambiguity is not possible in ASL due to how the verb is inflected (3.54).

(3.54) ASL lack of quantification ambiguity due to verbal morphology

$\overline{{}_{a}\text{STUDENT}}^{\text{t}}$, BOOK ANN GIVE$_{a[exhaustive]}$ (Petronio 1995: 611)

The ASL example can only have the interpretation that each student received their own book, a point that is made clear by how the sign is produced.

The one example of ambiguity involving quantification that I have been able to locate in the literature (3.55) is inconclusive with respect to the question of whether the language exhibits rigid scope.

(3.55) ASL potential quantificational scope ambiguity

$\overline{\text{BOOK,}}^{\text{t}}$ TWO STUDENT BUY

a) 'Two students each bought a book'

b) 'Two students together bought a book'

c) 'Two students bought books' (Petronio 1995: 607)

The item was collected as part of a study that focused more on the interpretation of bare nouns and quantification in ASL rather than a study focused on discerning scopal ambiguities. Notably, one of the two scope taking items, BOOK, is topicalized. BOOK may start out lower in the structure, below BUY, and raise to the front as part of topicalization. This means the ambiguity could just as easily derive from the conflict between the surface order reading or a reading reliant on the original position of the trace rather than on the quantifier raising that is typically assumed to be responsible for scopal ambiguities. In other words, this example does not provide evidence as to whether or not ASL has rigid scope.

In addition to the unclear status of quantifier interpretation in ASL, there are the somewhat more established facts regarding modals, elements that introduce possibility and obligation and that are frequently involved in scopal ambiguities. While research on modals in ASL is still somewhat limited, what research has been done largely agrees on two points: 1) modals can occur in different positions within the sentence, and 2) the location impacts interpretation (Wood 1999, Shaffer 2004, Wilcox & Shaffer 2006). For example, Shaffer (2004) claims that though both examples in (3.56) involve agent-oriented necessity (expressed by MUST), the former involves a condition the agent places on themselves and the latter involves a situational constraint or condition placed on the agent and furthermore involves subjective commentary from the speaker about the situation.

(3.56) Example of claim location impacts interpretation of modals in ASL

a) $\overline{\text{1ST GRADE}}^{\text{top}}$ DECIDE MUST PUT PUBLIC SCHOOL

'When he got to first grade I decided I had to put him in public school'

b) LOOK (ctr) SENTENCE MUST

'They needed to watch the whole sentence.' (Shaffer 2004)

According to Shaffer (2004), the former case is situated in a context that makes it clear that the signer was the one who decided that the condition was necessary for her to perform while in the latter case, the context makes it clear that the signer was commenting on the situational necessity of A to happen in order for B to occur. In other words, surface location of modals limits interpretational possibilities, again reducing the chances of scopal ambiguities arising in the language.

Taking all of the known information together, it seems most likely that the reported ambiguity for English would simply not be achievable in ASL for language-specific reasons. The language has several mechanisms for avoiding the type of ambiguity the test relies on in the first place. These mechanisms for avoiding ambiguity furthermore make it possible that utterances meant to create such ambiguity would be rejected for pragmatic reasons. At any rate, the amount of testing that would need to be done to make sure the requisite presuppositions the test relies on hold for ASL would certainly be outside of the scope of the current project. More information about quantification and scopal relations in ASL would be needed before the test in (3.50) could be employed.

3.4.2 NPIs test for downward entailing environment

Another well-established test for supporting claims about the structure of comparatives that will not be utilized in this project is the ability of the standard introducing element (*than* in English) to license negative polarity items (NPIs). As with the previously discussed test, it is unclear if the prerequisite conditions for employing the test are present in ASL or if language-specific facts prevent a direct application of the test.

At least since Hoeksema (1983), it's been known that *than* licenses NPIs in English (3.57).

(3.57) Licensing of NPIs in English *more*-constructions

Fido is more dangerous than *any* dog has *ever* been. (Hoeksema 1983: 425)

In (3.57), there are two NPIs present, *any* and *ever*. These NPIs cannot occur just anywhere in English, but only in specific environments, such as where negation is present (3.58).

(3.58) Restrictions on NPIs in English

a) Fido doesn't have *any* bones.

b) *Fido has *any* bones.

c) Fido hasn't *ever* been to the neighbor's yard.

d) *Fido has *ever* been to the neighbor's yard.

The fact that English *more*-comparatives create such a licensing environment for NPIs indicates the presence of covert structure and is something that any analysis of English *more*-comparatives must account for. In the literature, this has been done in a variety of ways, such as through the maximality operator (such as that used in Heim 1985), which is capable of creating a downward entailing environment[17] (the licensing environment argued to be necessary for NPIs in Ladusaw 1980).[18] All of this means that knowing whether or not the standard of comparison can license an NPI provides a clearer picture of the underlying structure for a given comparative construction.

However, research on NPIs in ASL is limited. There is one report that ANY behaves as an NPI in ASL for at least one consultant, with the note that it is still possible it has free choice, or yet other, readings in various contexts (Schlenker 2017), and another study that leverages this fact (Loos 2017). Other than this, the discussion

[17]In such environments, more restrictive cases are entailed by the more general case. For example, *"You may never eat ice cream,"* entails *"You may never eat ice cream in bed,"* and is downward entailing. However, *"You may eat ice cream,"* does not entail *"You may eat ice cream in bed,"* and is not downward entailing, no matter how many 5-year-olds may wish it were.

[18]See Morzycki (2015) for a good overview of the various ways NPIs in comparatives have been accounted for.

of NPIs in ASL is sparse. Due to limited language-specific information, the question of whether the MORE- or BEAT-constructions can license NPIs will be put to the side for this study, but is an issue that may need to be revisited in the future.

3.4.3 Negative island test for operator properties

Likewise, another test being excluded from the present study but that may warrant revisiting in the future is testing for the presence of negative islands. Unlike what its name might suggest, the negative island constraint is a semantic rather than syntactic test. It involves the observation that utterances like (3.59) are not permitted.

(3.59) English negative island constraint

*Lydia is taller than none of her sisters is. (Beck 2011)

The difficulty stems from the negative pronominal quantifier *none* being within the standard-denoting *than*-phrase. On one common analysis, the *than*- phrase involves a definite degree description and/or requires a maximality operator in order to return the relevant degree for comparison (Stechow 1984, Heim 1985).[19] The maximality operator requires that the greatest possible degree be returned for evaluation; however, (3.59) seems to have no maximum and is thus undefined.

The difficulty in applying the negative island test to ASL largely stems from the fact that the lexical item most often used to translate the English *none* is NO_0. This lexical item, however, is argued extensively to be a negative *determiner* rather than pronominal and does not behave quite like its nearest English counterpart (Wood 1999). Other candidates for a negative pronominal quantifier, such as NOBODY, do not enjoy consensus in the literature. Given that it is already known that negation in ASL differs from English in a few key ways (see Wood 1999 for some examples), such a background study would be necessary before trying to build the appropriate counterpart test in ASL. Therefore, for the time being, this test will not be used, but

[19]For a good review of this analysis and other competing analyses involving covert negation to account for the negative island constraint, among other observations, see Alrenga & Kennedy (2014).

may be workable in the future depending on what other language-dependent facts are discovered.

3.5 Field work procedures for administration of tests

Having outlined the tests developed for answering the current set of research questions, it is time to discuss the methodological approach taken. This study took a field-methods interview approach to collecting grammaticality judgments on the test items. As mentioned in §1.1.2, ASL is a very discourse-sensitive language. A field-methods approach allowed for extensive follow-up to ensure that if an utterance was being rejected as ungrammatical, the provided context was not responsible. It also made it possible to verify that the intended reading was the one being judged in a handful of cases where it was believed that an unintended, but possible, reading might be accepted with the utterance. It furthermore allowed for solicitation of alternative ways to sign the intended meanings of several items and commentary from signers about when and how they would or would not prefer to use the constructions, all of which was beneficial given how little is known about comparatives in ASL more generally.

Excepting for piloting work with the first consultant, interviews were conducted by Deaf collaborator Dr. Sandra Wood to insure that acceptability judgments were not influenced by varieties of contact-signing that may be introduced in conversation with a non-native, hearing, signer. Consultants were asked to repeat the utterance as signed by the interviewer and to then indicate whether they felt the utterance was a good, natural ASL utterance or a bad/weird, unnatural one. Asking consultants to repeat the utterance before rendering a grammaticality judgment allowed for verification that the judgment rendered was for the item presented and not a repaired version. This also allowed for observation of degree of difficulty associated with reproducing ungrammatical utterances and whether and what types of repairs were frequently attempted. Consultants were encouraged to share their thoughts and

feelings on how they would prefer to sign the utterance in all cases. Some of the interviews were conducted in person while others were conducted remotely via video-conferencing software. Interviews were video-recorded for subsequent analysis. In all, six Deaf consultants provided their judgments and insights that were used for analysis in this study.

Items associated with the various tests were divided into three blocks (A, B, & C). Block B was always presented second and consisted solely of the picture description items related to the norm-relatedness task. This was done for two reasons. First was because it was believed that this task would be the least cognitively demanding and would therefore provide a minor rest for informants. The second reason was that the task associated with that set of items was different in nature as it required filling in a blank rather than providing grammaticality judgments. Consistently placing it in the middle would thus help prevent the interview session from becoming overly monotonous. Both having a less demanding task combined with task variability was intended to better maintain consultants' interest and thereby ensure higher quality responses. To the same end, breaks were provided between each block. Blocks A & C were comprised of a roughly even split of items that were not related to the norm-relatedness task. Items were grouped thematically within each block, however. For example, a set of questions about degree differentials would all occur together within the same block. This was designed to facilitate discussion of any differences in preferences between such items. Blocks A and C were alternated across consultants such that consultant 1 saw block order A, B, C, and consultant 2 saw block order C, B, A. A complete list of test items is provided in Appendix A while a complete list of items by block with the contexts that were provided is given in Appendix B.

3.5.1 Demographics

A summary of the demographic information of the consultants interviewed for this study is provided in Table 3.1. The consultant number is given followed by each

consultant's gender, ethnicity, age by decade, whether they had early exposure to ASL, the geographical location associated with the majority of their upbringing, notes about what type of elementary and high school education they received, the extent of their higher education, and the hearing status of their parents. All consultants had early exposure to ASL, defined here as occurring prior to starting school (normally by the age of 2), so this information was omitted from the table. All consultants were white, with the majority being women in their thirties and the next sizable majority being women in their fifties. As noted above, educational experiences throughout elementary and high school vary substantially, but most consultants attended a school for the deaf and/or were enrolled in a deaf program at some point in their early education. Most consultants also had some level of post-bachelor's education, though one had no higher education. Parental status varied, with the majority of consultants having hearing parents.

3.5.2 Data processing and analysis

With respect to data coding, items for Block A and C were coded for grammaticality judgments. Judgments for each consultant for each item were coded as "grammatical," "ungrammatical," "marginal," or "unclear." "Grammatical' was used in cases where the consultant clearly indicated that the item was good or acceptable. "Ungrammatical" was used in cases where a consultant indicated the item was bad, weird, or that they otherwise did not like it or that the item felt like English. "Marginal" was used in cases where a consultant indicated that the item was so-so, that they were unsure about it, or that they see the item or things like the item in use or would not find it weird to see someone else sign it. "Unclear" was reserved for cases where it was not obvious to the annotator what the consultant's final judgment on the item was. Block B, the picture description task associated with the norm-relatedness test, was reviewed and annotated for the number of acceptable responses for filling in the blank and answering the question associated with each picture. It should be noted that there was video loss for one of the participants. In this case, notes on judgments made during the interview were used. All results were compiled into tables which are presented here in the chapters that follow along with analysis and discussion.

Table 3.1.: Summary of demographic information of consultants whose judgments informed the study

	Gender	Ethnicity	Age	Geography	Elem/HS Ed.	Higher Ed.	Parents
1	woman	white	50s	Indiana	Deaf school	PostBach	Hearing
2	woman	white	30s	Massachusetts	Homeschool (Pre-K-K w Deaf teacher consulting)/Deaf program (1st-5th)/Mainstream with interpreter (6th-7th)/Deaf school (8th-11th)/Deaf School Sweden (12th)	PostBach	Hearing
3	man	white	30s	Colorado	Deaf program at public school/Deaf school	NA	Hearing
4	woman	white	50s	New Hampshire	Deaf school/public (hs)	PostBach	Deaf
5	woman	white	30s	California	PSE/ASL in classroom, some mainstreaming	PostBach	Hearing
6	woman	white	30s	Texas	Deaf school, some mainstreaming	PostBach	Deaf

4. ASL MORE-CONSTRUCTION

In this chapter, we will look at the results test by test for the MORE-construction. As will be shown, the results indicate that the ASL MORE-construction shares a similar syntax and semantics with the English canonical comparative of superiority. In particular, results indicate that the ASL MORE-construction 1) is comprised of a single matrix clause with a standard of comparison that is embedded in a syntactic island and a comparative predicate that exhibits complement-like behavior with respect to the standard marker, 2) makes use of degrees and has a standard of comparison that is associated with a degree rather than manipulating the contextually supplied standard, and 4) most likely selects for clausal standards of comparison. On the whole, however, the data were consistent with the working hypothesis adopted at the end of Chapter 2.

Furthermore, data indicate additional variables, such as discourse sensitivity, identity formation, and/or dialectal variation need to be further examined to better understand the felicity conditions of the construction. As noted throughout, two of the consultants, numbered 2 and 3 in the results tables, consistently disliked the MORE-construction more generally and their responses are accordingly removed from interpretation and discussion as we do not want to mistake judgments of individual items with judgments about the construction itself in our analysis. This decision is further underscored in the tables used to report the results by graying the columns associated with those consultants' responses. We will return to this issue in the discussion of the analysis for the MORE-construction at the end of the chapter.

4.1 Constituents and clause boundaries for MORE-construction

The first research question to address is where are the clausal boundaries and what is the basic constituency structure for the ASL MORE-construction. To that end, the WH-doubling test was employed on the comparee, standard of comparison, and comparative predicate. As consultants 2 and 3 consistently rejected the MORE-construction itself, I will focus on the responses of the other consultants. For them, the comparee could undergo WH-doubling, but the standard of comparison typically could not. The comparative predicate furthermore could not undergo WH-doubling. This suggests that 1) the assumed form of the construction is indeed comprised of a single matrix clause, 2) the standard of comparison is likely clausal, and 3) the comparative predicate does not behave as a fully independent constituent.

4.1.1 Evidence for one matrix clause

Consultants who accepted the MORE-construction consistently judged WH-doubling of the comparee to be grammatical, indicating that the construction is composed of a single matrix clause and not of multiple independent clauses. The full set of responses from each consultant for this test are presented in Table (4.1).

Table 4.1.: Results for WH-doubling of comparee in ASL MORE-construction

Item	1	2	3	4	5	6
$\overline{\text{WHO MORE BEAUTIFUL THAN QUEEN WHO}}^{\text{whq}}$	✓	*	*	✓	✓	✓

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

As discussed in §3.1.3, the interpretation associated with WH-doubling of the comparee is as follows:

1) If doubling of the comparee fails, then the construction is composed of more than one matrix clause; however, if doubling of the comparee succeeds, then the construction is composed of one matrix clause.

If the surface order assumed to account for the MORE-construction had been comprised of two independent matrix clauses, then doubling of the comparee should have been ungrammatical, as it would have required coindexing the twin and the double across clausal boundaries. However, as the comparee can undergo WH-doubling, it is clear that only one matrix clause is involved. Importantly, this tells us that, for the signers who accepted the construction, the assumed surface order is indeed comprised of a single matrix clause (4.1).

(4.1) ASL MORE-construction as single matrix clause
[comparee (MORE comparative_predicate)/(comparative_predicate.MORE)
MORE standard_of_comparison]CP

4.1.2 Evidence for a syntactic island in the MORE-construction

The second WH-doubling test involves the standard of comparison. Judgments generally suggest that the standard of comparison cannot undergo WH-doubling, indicating that it is located within a syntactic island. Again, while the interpretation of the data here excludes 2 and 3 from analysis for the time being, the full set of responses is shown in Table 4.2. As can be seen, the WH-doubling of the comparee is

Table 4.2.: Results for WH-doubling of standard in ASL MORE-construction

Item	1	2	3	4	5	6
$\overline{\text{WHO SNOW-WHITE MORE BEAUTIFUL THAN WHO}}^{\text{whq}}$	*	*	*	*	✓	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

most often rejected as ungrammatical or judged marginal, though it is occasionally judged grammatical.[1] As detailed in §3.1.3, the interpretation of the standard of comparison's ability to undergo WH-doubling is as follows:

[1]There was at least one session in which consultant 1 judged such an utterance as grammatical, but the most consistent response was that it was ungrammatical. This variation in judgment may simply reflect that this construction has a clausal and a phrasal option available.

2) If doubling of the comparee succeeds, then if doubling of the standard of comparison succeeds, the standard is allowed to be phrasal, whereas if it fails, then the standard of comparison has committed some kind of movement violation, possibly due to being within a dependent clause with a covert operator.

Given that WH-doubling of the comparee succeeded but doubling of the standard of comparison typically failed, we are led to affirm the consequent and conclude that the standard of comparison in the ASL MORE-construction incurs some kind of movement violation, possibly indicating that it is located within a syntactic island. This is a point we will return to when we look at the results for the wh-island and time adverbial tests later on in this chapter.

4.1.3 Evidence the comparative predicate is not an independent constituent in the MORE-construction

The last WH-doubling result for the MORE-construction indicated that the comparative predicate is not a fully independent constituent. Again, excluding 2 and 3, consultants found WH-doubling of the comparative predicate to be ungrammatical, as can be seen in Table 4.3. Remember that in §3.1.3 we established the following:

Table 4.3.: Results for WH-doubling of comparative predicate in ASL MORE-construction

Item	1	2	3	4	5	6
$\overline{\text{HOW SNOW-WHITE MORE THAN QUEEN HOW}}^{\text{whq}}$	*	*	*	*	*	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

3) Furthermore, any part of the construction that can be targeted with WH-doubling forms an independent constituent.

We see here that the comparative predicate cannot be targeted with WH-doubling. It most likely does not form a fully independent constituent subject to A'-bar movement

unless, as is argued for the comparee, it is contained within a syntactic island that would prevent such movement.

This could indicate that the comparative predicate behaves somewhat like a complement in this construction. That is, one reason it may not be subject to A'-movement is because it is in the same kind of relationship with the comparative morphology as a determiner is with a noun phrase. This is a point we will return to both when discussing how the results comport with the initial analysis adopted for the ASL MORE-construction and again in chapter 6 when we examine the similarities and differences between the MORE- and BEAT-constructions. For now, it is obvious that it incurs some kind of movement violation, regardless of how such a violation is ultimately accounted for.

4.1.4 Summary of WH-doubling test results for the MORE-construction

Taken altogether, the WH-doubling tests demonstrate that the MORE-construction is comprised of a single matrix clause and that the comparee forms its own constituent. Furthermore, the WH-doubling test provides us initial evidence that the standard of comparison for the MORE-construction is possibly contained within a syntactic island and that the comparative predicate is not a fully independent constituent, perhaps indicating complement-like behavior.

4.2 Evidence for presence and location of degrees in the MORE-construction

The second research question considers whether we can find any evidence to indicate the presence and/or location of degrees in the construction. To this end, a battery of tests involving degree differentials, degree comparisons, subcomparatives, and degree competition was employed. Results indicate the MORE-construction in ASL utilizes degrees.

4.2.1 Degree differentials

The first set of results concerning degree differentials–phrases such as *2 inches* that indicate the extent to which the two entities being compared differ from one another–show that the MORE-construction can take degree differential phrases and that therefore, the construction does contain degrees. Remember that in §3.2.1 the interpretations for degree differential phrases were as follows:

1) If degree differentials are judged grammatical for a construction, then the construction should have degrees available at some point in its derivation, whereas incompatibility with degree differentials indicates the construction does not involve (multiple, explicit) degrees.

Results, shown in Tables 4.4-4.8[2] and organized by word order variation, show that degree differential phrases are indeed compatible with the MORE-construction but that word order does seem to play a role in acceptability, at least for some signers.

Table 4.4.: Results for degree differential tests in ASL MORE-construction: Comparee Differential MORE Predicate THAN Standard

Item	1	2	3	4	5	6
BRUNO 20LB MORE HEAVY THAN KARL	∼	*	*	✓	✓	∼
BRUNO 2-INCHES MORE TALL THAN KARL	✓	*	*	✓	✓	*
BRUNO 5-YEARS MORE OLD THAN KARL	∼	*	*	*	*	∼
TODAY 5-DEGREES MORE HOT THAN YESTERDAY	∼	*	*	✓	∼	✓

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

[2]All items were presented to all signers with comparative predicates present. Some items were additionally presented without the comparative predicate, which sometimes impacted reported judgments.

Table 4.5.: Results for degree differential tests in ASL MORE-construction: Comparee Predicate Differential MORE THAN Standard

Item	1	2	3	4	5	6
BRUNO HEAVY 20LB MORE THAN KARL	∼	*	∼	✓	✓	✓
BRUNO TALL 2-INCHES MORE THAN KARL	∼	*	∼	∼	✓	✓
BRUNO OLD 5-YEARS MORE THAN KARL	*	*	∼	*	*	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

Table 4.6.: Results for degree differential tests in ASL MORE-construction: Comparee Differential Predicate MORE THAN Standard

Item	1	2	3	4	5	6
BRUNO 20LB HEAVY MORE THAN KARL	*	*	∼	∼	✓	∼
BRUNO 20LB MORE THAN KARL	✓					
BRUNO 2-INCHES TALL MORE THAN KARL	*	*	∼	*	*	✓
BRUNO 2-INCHES MORE THAN KARL	✓					
BRUNO 5-YEARS OLD MORE THAN KARL	∼	*	*	*	*	*
BRUNO 5-YEARS OLD.UP THAN KARL [1]		*	∼	✓	✓	✓
" "[1]		✓	✓	✓	✓	✓
TODAY 5-DEGREES HOT MORE THAN YESTERDAY	*	*	*	∼	*	✓[2]

[1]This item was collected twice for several participants. Both responses are reported.

[2] with additional NMMs

Table 4.7.: Results for degree differential tests in ASL MORE-construction: Comparee MORE Predicate THAN Standard Differential

Item	1	2	3	4	5	6
BRUNO MORE HEAVY THAN KARL 20LB	✓	*	*	✓	*	∼
BRUNO MORE TALL THAN KARL 2-INCHES	✓	*	*	✓	*	∼
BRUNO MORE OLD THAN KARL 5-YEARS	✓	*	*	∼	*	*
TODAY MORE HOT THAN YESTERDAY 5-DEGREE	✓					

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

Table 4.8.: Results for degree differential tests in ASL MORE-construction: Misc. word orders

Item	1	2	3	4	5	6
TODAY MORE HOT 5-DEGREES THAN YESTERDAY	*	*	*	∼	*	∼
TODAY HOT MORE THAN YESTERDAY 5-DEGREES		*	∼	✓	*	✓[1]

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

[1] with additional NMMs and pause

Again, ignoring the responses of consultants 2 and 3 for the time being, most consultants judged that differential phrases are compatible with the MORE-construction, though there is some variability in where in the utterance the consultants judged the differential phrase should go. For example, consultant 1 preferred the differential phrase to be placed last (as in Table 4.7) unless the comparative predicate was elided, in which case it could appear directly before MORE (as in Table 4.6). However, consultants 4 and 5 found the differential phrase to be grammatical before MORE without the need to elide the comparative predicate (Table 4.4) and consultant 5 consistently rejected the differential phrase in utterance final position (Table 4.7). It is unclear at this point if these differences reflect dialectal variation concerning placement of measure phrases or complex interactions with language-specific rules regarding focus prominence, which generally requires emphasized material to occur utterance finally. (See Wilbur's 1996 analysis of WH-clefts, among others.) Additionally, it is clear that OLD needs to be paired with the bound morpheme .UP in order to be acceptable. Care should be taken when interpreting results from the table involving HEAVY. Several cases where it appears to depart from the behavior of other comparative predicates are the result of preferring WEIGH; they mostly reflect a lexicalization issue rather than an incompatibility with the dimension of the scale provided by the comparative predicate. Aside from these minor qualifications, however, the fact remains that differential phrases are compatible with the construction. This leads us to the conclusion that multiple degrees are involved in the composition of the MORE-construction in an explicit manner.

4.2.2 Degree comparisons

The results of the next test, degree comparisons, is also consistent with the analysis that degrees are involved in the composition of the MORE-construction. Referring back to §3.2.2, we established that the hypotheses concerning whether a measure

phrase, such as *6 feet*, can serve as the standard of comparison in a construction were as follows:

2) If degree comparisons are permitted, then in the least, the language has degrees available and degrees are likely involved in the construction under consideration.

The results, laid out in Table 4.11, show that degree comparisons are possible with the MORE-construction. As before, we will remove the responses of consultants 2

Table 4.9.: Results for degree comparison tests for ASL MORE-construction

Item	1	2	3	4	5	6
BRUNO MORE THAN 6' 3"	*[1]	*	*	✓	✓	*
BRUNO MORE THAN 200LB	✓	*	*	✓	✓	*
BRUNO MORE THAN 70-YEARS		*	*	*	*	∼
BRUNO MORE TALL THAN 6' 3"	✓	*	*	✓	∼	✓
BRUNO MORE HEAVY THAN 200LB	✓	*	*	✓	∼	✓
BRUNO MORE OLD THAN 70-YEARS	✓	*	*	✓	✓	∼
BRUNO MORE THAN 6'3" TALL	*	*	*	✓	∼	*
BRUNO MORE THAN 200LB HEAVY	*	*	*	*	*	*
BRUNO MORE THAN 70-YEARS OLD		*	*	✓	*	*
BRUNO OLD.UP THAN 70-YEARS		*		*	∼	✓

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point
[1] in given context

and 3 from consideration for the time being. For the remaining consultants, it was possible to use a measure phrase as the standard of comparison. This was most consistently judged grammatical in cases where the comparative predicate was overtly specified between MORE and THAN rather than being elided, which was occasionally grammatical, or being placed after the measure phrase, which was frequently judged ungrammatical. The ability of the MORE-construction to form degree comparisons further strengthens the claim that the construction as well as the language makes use of degrees.

4.2.3 Relationship to the positive form

The next test concerning degrees involves the relationship of the MORE-construction to the positive form. More specifically, we should like to know whether the MORE-construction itself entails the positive or negative form of the comparative predicate for either the comparee or the standard of comparison. Results from the picture description task described previously in §3.2.3 indicate that use of the MORE-construction does not entail the positive form. However, results for this task were limited to one consultant and so conclusions are not as robust.

The task associated with the question of how the MORE-construction relates to the positive and negative form involved examining an image such as that in Figure 4.1 and indicating which people could be used to successfully complete a provided frame, in the case of Figure 4.1, CORA MORE BIG THAN WHO. The interpretation of

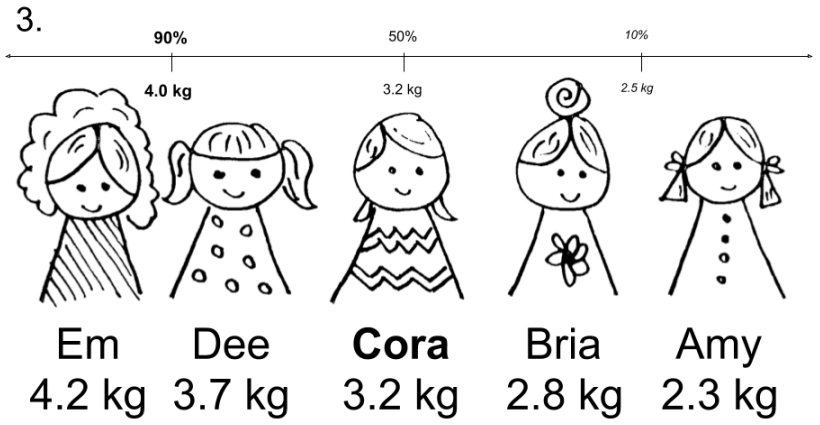


Figure 4.1.: Example of norm-relatedness picture task, repeated from Figure 3.1

results associated with this test was as follows:

3) If the comparative construction under consideration induces (anti-)norm-relatedness readings, then restrictions will emerge as to which children to the right of the comparee in the picture description task can be used as the standard of com-

parison. Restrictions may also emerge as to which children can serve as the comparee.

As we shall see, no restrictions emerged for the consultant whose results could be analyzed, indicating that use of the MORE-construction does not entail the positive or negative form of the comparative predicate for either the comparee or the standard of comparison.

Unfortunately, the only data set that could be adequately analyzed for this task was that of the first consultant. As previously noted, the second and third consultants consistently rejected the MORE-construction, and that was true with this task as well. They both indicated that they did not find the construction acceptable for any of the children because they disliked the construction itself. This was a marked difference in their response to the same task with the BEAT-construction where, while they indicated that they found the task itself somewhat odd, they nevertheless produced some possible responses that could be made with the BEAT-construction in response to the task. They simply refused to describe any of the pictures, however, using the MORE-construction. This indicates a possible dialectal, social, and/or discourse driven variable limiting the use of this construction, a point we will return to when we discuss the proposed analysis for the MORE-construction at the end of this chapter. Data from the four remaining consultants all fell victim to pitfalls of remote data collection when it came to this task. For two of them, technical problems resulted in the loss of video and the notes taken at the time of data collection were insufficient to recover the relevant distinctions. The other two did not have consistent access to the images involved in the description task at the time they were responding and instead were relying on having set the children up in the signing space for reference. The number of children and the weights involved (upwards of 10 bits of information) make it unlikely that the relevant distinctions were remembered and applied when determining which children could and could not co-occur in the frame. Therefore, these results were also removed from analysis.

For the consultant whose responses could be analyzed, there were no restrictions that emerged in response to the picture description task. All five of the children could serve equally as comparees and for any comparee, any and all of the children who weighed less than they did could serve as the standard of comparison. In the case of the child Amy, the sign NONE could be used as the standard of comparison to indicate that she was the smallest of the siblings. Given that Amy in particular is explicitly designated as SMALL in the context provided, the fact that she can consistently serve as a standard of comparison firmly indicates that the MORE-construction does not entail the positive form of the comparative predicate for the standard of comparison. Also, given that CORA, predefined as being of average size, BRIA, and DEE were all able to serve as comparees further indicate that the construction also does not entail the positive form of the comparative predicate for the comparee. Finally, given that EM could serve as the comparee, there is also no evidence that use of the MORE construction entails the negative form of the comparative predicate, at least for the comparee. Altogether, it seems the MORE-construction does not induce any (anti)norm-relatedness readings.

While as noted above, the available data limits the robustness of this finding, the indication that the MORE-construction does not induce any (anti)norm-relatedness readings would suggest that the construction does not rely on a semantics that manipulates the contextual standard in order to evaluate the comparee, but rather that the standard of comparison supplies the degree used in the comparison directly.

4.2.4 Subcomparatives

The next test for further probing the presence and location of degrees in the MORE-construction was the grammaticality of subcomparatives, comparisons that order two entities with respect to two distinct dimensions. In general, the results of this test suggest that the construction utilizes degrees, but that the presence of a (covert) subcomparative measure phrase morpheme is not as widespread.

While Wilbur et al. (2018) reported that subcomparatives seemed to be permitted with the MORE-construction but not the BEAT-construction, the results from this study found that acceptance of subcomparatives seemed to vary more by speaker than by construction. As can be seen in Table 4.10, consultant 5 did not care for them whereas consultants 1, 4, and 6 allowed them, albeit in a limited number of cases. Again, setting aside the responses of consultants 2 and 3 for the time being, subcom-

Table 4.10.: Results for subcomparative tests in ASL MORE-construction

Item	1	2	3	4	5	6
EVA MORE SMART THAN BOB FRIENDLY	*	*	*	*	*	*
BOB MORE FRIENDLY THAN SMART	✓	∼	∼	✓	*	∼
TABLE MORE TALL THAN DOOR WIDE	✓[1]	*	*	*	*	*
TABLE TALL MORE THAN DOOR WIDE		*	*	✓	*	*
DOOR MORE WIDE THAN TALL	*	*	*	✓	∼	∼
DOOR WIDE MORE THAN TALL		*	*	*	∼	✓
DOOR A MORE TALL THAN DOOR B WIDE		*	*	∼	*	∼
DOOR A TALL MORE THAN DOOR B WIDE		*	*	✓	*	✓

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

[1]with change in context so as to be discussing moving furniture and not simply describing the picture

paratives can be formed in some cases, but often only after building up a significant amount of context. This may at least partly explain why grammaticality judgments for them seem somewhat inconsistent and uneven. It is clear that the formation of a subcomparative using evaluative predicates and two distinct individuals are consistently ungrammatical. This is not terribly surprising as there is some disagreement in the literature as to whether such subcomparatives are possible even in languages where the presence of subcomparatives is relatively uncontested.[3] There is also some indication that there are some word order restrictions at play as well. The comparison of the dimension of height for one door against the dimension of width for another

[3]In English, for instance, there is some difference of opinion as to whether utterances like *Eva is smarter than Bob is friendly* only receive a meta-linguistic interpretation of *It is more appropriate to call Eva smart than it is to call Bob friendly* or if a subcomparative reading of *The extent to which Eva is smart is greater than the extent to which Bob is friendly* is also available.

door seems to be better if the first dimension is stated before MORE rather than after. The interpretation associated with subcomparatives was as follows:

4) If subcomparatives are possible for a given comparative construction, then it definitely involves degrees.

The limited number of signers who accept the subcomparative structure suggests that a (covert) subcomparative measure phrase morpheme may not be consistently present in the language. There is not enough data at this time to determine which if any demographic feature most highly correlates with this variation. However, the fact that some signers do seem to possess such a morpheme and can use it with the MORE-construction does further indicate that degrees are present in the construction as well as in the language itself.

4.2.5 Degree modification

This brings us to our last test for the presence of degrees, which involved an attempt to locate modifiers that would require the presence of degree morphology that competes for the same functional degree head. To do this, the *intensive aspect* and the free lexeme Y-OO were tested for their compatibility with the comparative predicate in the MORE-construction. Results from this test indicate that neither *intensive aspect* nor Y-OO behave like English *very*, though Y-OO may behave similarly to English *really*. That being the case, results from this test are consistent with the proposed analysis for the ASL MORE-construction, but do not provide conclusive evidence on their own.

As the results of the previous tests involving degree differentials, degree comparisons, and subcomparatives all indicate degrees are involved in the composition of the MORE-construction, it makes sense to assume that if *intensive aspect* or Y-OO compete with degree morphology, they will be ungrammatical with the MORE-construction in at least some fashion.

As we see, the *intensive aspect* showed no sensitivity to being included inside the MORE-construction while Y-OO did, as can be seen in Table 4.11. Again, ignoring

Table 4.11.: Results for degree competition candidates in ASL MORE-construction

Item	1	2	3	4	5	6
EVA SMART	✓	✓	✓	✓	✓	✓
EVA SMART$_{intensive}$	✓	✓	✓	✓	✓	✓
EVA Y-OO SMART	✓	✓	?	✓	✓	✓
EVA MORE SMART$_{intensive}$ THAN BOB	✓	*	*	✓	✓	✓
EVA Y-OO MORE SMART THAN BOB	∼	*	*	✓	✓	✓
EVA MORE Y-OO SMART THAN BOB	*	*		*	*	✓
EVA MORE SMART Y-OO THAN BOB	*	*	*	*	*	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

consultants 2 and 3 for the time being, we can see that the *intensive aspect* may combine with the comparative predicate in the MORE-construction (4.2).

(4.2) ASL MORE-construction with *intensive aspect*

EVA MORE SMART$_{intensive}$ THAN BOB

The free lexeme modifier Y-OO, however, does not appear to be grammatical with the comparative predicate inside of the MORE-construction. That being said, unlike English *very*, Y-OO is able to occur prior to the comparative morpheme MORE (4.3).

(4.3) ASL MORE-construction with Y-OO

a) *EVA MORE Y-OO SMART THAN BRUNO

b) EVA Y-OO MORE SMART THAN BRUNO

The current interpretation of these results is that the *intensive aspect* does not have the same syntax and semantics as English *very* or *really*, but that the lexeme Y-OO may have a distributional pattern similar to English *really*. The overall behavior of both *intensive aspect* and Y-OO is something that will be returned to in Chapter 6, when we compare the MORE-construction and the BEAT-construction to each other more directly. While the distributional patterns of *intensive aspect* and Y-OO cannot

be taken as evidence of degrees on their own, the patterns are nevertheless consistent with the premise that the MORE-construction carries degree phrases.

4.3 Selectional properties of the standard marker in MORE-constructions

The last research question to address is what, if any, selectional properties does the standard marker have. In particular, we should like to know if there is any evidence to suggest the standard of comparison is clausal, particularly whether it contains a (covert) wh-operator. While the time adverbial test indicates that the standard of comparison may be a clause, the WH-doubling test provides preliminary evidence that the standard of comparison is embedded in a syntactic island, and the wh-island test provides further indication that a covert wh-operator may be present, though these results are not definitive.

4.3.1 Time adverbial tests indicate presence of clauses

The first test involving a time adverbial relies on the idea that if there are two clauses involved, namely the matrix clause and a dependent clause inside of the standard of comparison, then we should be able to compare the same item across time, meaning that we should be able to associate a time adverbial with the standard of comparison.[4] This leads us to the previously stated expected set of interpretations for this test:

1) If a time adverbial can be used to modify the standard of comparison, then the standard of comparison can contain a clause (though may not be a clausal standard of comparison in the relevant sense). However, if a time adverbial cannot be used to modify the standard of comparison, then it is most likely phrasal.

[4]Note, this relies on assumptions about comparative deletion touched on in the previous chapter.

The results in Table (4.12) indicate that a time adverbial can be used to modify the standard of comparison, but assent was not unanimous, leaving room for doubt. Two of the four consultants who accepted the MORE-construction, 1 and 4, judged

Table 4.12.: Results for time adverbial test in ASL MORE-construction

Item	1	2	3	4	5	6
M-A-R-Y MORE TALL THAN 5-YEAR-PAST	✓	*	*	✓	∼	∼

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

the presence of a time adverbial within the standard of comparison as grammatical. However, the other two, 5 and 6, deemed it marginal. This split on the ability to place the time adverbial 5-YEAR-PAST in the standard of comparison indicates that a clausal phrase may indeed serve as the standard of comparison. However, even accepting the acceptable/marginal split as in favor of assuming a clause may be present in the standard of comparison, this result does not tell us whether there is a (covert) wh-operator of the sort necessary to consider it a clausal standard of comparison, that is a comparison of degrees.

4.3.2 Relevant WH-doubling results indicate clausal standard, but inconclusive

The first source of data that can provide evidence for a (covert) wh-operator in the standard of comparison comes from a review of the relevant data from the WH-doubling tests. The data presented above in §4.3, is repeated here in Table 4.13. For the most part, consultants who accepted the MORE-construction to begin with

Table 4.13.: Results for WH-doubling of standard in ASL MORE-construction, repeated from Table 4.2

Item	1	2	3	4	5	6
$\overline{\text{WHO SNOW-WHITE MORE BEAUTIFUL THAN WHO}}^{\text{whq}}$	*	*	*	*	✓	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

found WH-doubling of the standard of comparison to be ungrammatical even though WH-doubling of the comparee was grammatical (refer to Table 4.1). As previously outlined §3.3.1, the general interpretation of this data concerning WH-doubling of the standard of comparison and the selectional restrictions of the standard marker is as follows:

2) If doubling of the comparee succeeds, then if doubling of the standard of comparison succeeds, the standard is allowed to be phrasal whereas if it fails, then the standard of comparison has committed some kind of movement violation, possibly due to being within a dependent clause with a covert operator.

The results indicate that A'-bar movement of the standard of comparison is typically blocked in the MORE-construction, and this could be due to the presence of a (covert) wh-operator, but it could also be the result of a different type of movement violation.

4.3.3 Wh-island tests indicate clausal standard, but inconclusive

In order to actually determine whether a wh-operator was present, it was necessary to use the question-embedding predicate WONDER to test for wh-island effects. However, effectiveness of this test and robustness of the findings from it were limited by two factors. The first is the number of consultants who showed the relevant wh-island effects in control items and the second was the presence of a confounding factor concerning word order. Nevertheless, results are indicative if not conclusive that the MORE-construction can select for clausal standards of comparison.

Recollect that the relevant interpretation associated with the wh-island test in §3.3 is as follows:

3) Provided question-embedding predicates induce wh-island effects:

    a) If neither a (semi-)factive- [THINK] nor question-embedding [WONDER] predicate can be placed in the standard of comparison, then the standard of comparison is most likely obligatorily phrasal.

b) On the other hand, if a semi-factive predicate [THINK] but not a question-embedding predicate [WONDER] can be placed in the standard of comparison, then the standard of comparison is at least sometimes clausal with a covert operator.

As can be seen from the formulation above, the first thing that needs to be verified is whether question-embedding predicates induce wh-island effects. To that end, several items designed to elicit traditional wh-island effects outside of the MORE-construction were presented to signers for judgments to establish a baseline for interpretation of the results. The relevant question for these items is whether the subject of a clause following a question-embedding predicate [WONDER] can be replaced with a wh-question word when the same subject of the same clause can be replaced with a wh-question word when embedded under a (semi-)factive predicate [THINK]. If it is not possible with the question-embedding predicat [WONDER] even though it is possible with the (semi-)factive-embedding predicate [THINK], then we have evidence for wh-island effects. Responses for these items, presented in Table 4.14, indicate that only one consultant exhibited wh-island effects. For the first consultant, utterances

Table 4.14.: Results for wh-island test verification

Item	1	2	3	4	5	6
IX-1/IX-3MAX WONDER $\overline{\text{IX-3 SMART}}^{\text{cond}}$	Better if Q at end	✓	∼	✓	✓	✓
$\overline{\text{IX-1/IX-3MAX WONDER WHO SMART}}^{\text{whq}}$	*	✓	*	✓	✓	✓
$\overline{\text{IX-1/IX-3MAX WONDER SMART WHO}}^{\text{whq}}$		*	*	✓	✓	✓
$\overline{\text{IX-1/IX-3MAX THINK WHO SMART}}^{\text{whq}}$	Better if WHO at end	*	*	✓	✓	✓
$\overline{\text{IX-1/IX-3MAX THINK SMART WHO}}^{\text{whq}}$		*		∼	✓	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

like $\overline{\text{IX-1/IX-3MAX WONDER WHO SMART}}^{\text{whq}}$ were judged as ungrammatical while utterances like $\overline{\text{IX-1/IX-3MAX THINK WHO SMART}}^{\text{whq}}$ seemed to be mostly grammatical.

Note that the same effect was not observed for any of the other consultants, excluding 2 and 3.

This means that only the first consultant's responses are pertinent in trying to interpret the results of the wh-island tests for the MORE-construction, displayed in Table 4.15. This represents the first challenge to the robustness of the findings regarding wh-island tests, namely relying now on only one signer's judgments rather than multiple sets of responses. Based on the responses of the first consultant in the

Table 4.15.: Results for wh-island test in ASL MORE-construction

Item	1	2	3	4	5	6
M-A-R-Y MORE TALL THAN IX1 THINK	✓	*	*	✓	✓	✓
M-A-R-Y TALL MORE THAN IX1 WONDER	∼	*	*	*	*	✓

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

table above, it appears that the (semi-)factive can be embedded in the standard of comparison, but that the question-embedding predicate is more questionable. And here we encounter the second issue with this particular test in this study. The word order of the comparative predicate TALL and the comparative morpheme MORE are not the same across the two items tested. Thankfully, the first consultant also judged similar items in piloting phases that were not used in the remainder of the study. These responses further indicate a distinction between the (semi-)factive predicate (4.4) and the question-embedding (4.5) predicate when embedded in the standard of comparison of a MORE-construction.

(4.4) (Semi-)factive predicate in standard of MORE-constr. for one signer

M-A-R-Y MORE BEAUTIFUL THAN IX-1 THINK

Intended: Mary is more beautiful than I think/thought.

(4.5) Question-embedding predicate in standard of MORE-constr. for one signer

*M-A-R-Y MORE BEAUTIFUL THAN IX-1 WONDER

Intended: Mary is more beautiful than I wonder/ed.

If the standard marker has a covert wh-operator for a degree variable that needs to be bound, that degree variable is associated with the elided occurrence of *tall* that is located inside of the complement to either THINK or WONDER. WONDER already fills its CP complement with a +wh complement, blocking the wh-operator associated with THAN from accessing the appropriate degree variable. In other words, we expect (4.5) to be ungrammatical if the standard marker carries a covert wh-operator for clausal standards, but to be grammatical if it does not. As we see it is ungrammatical. However, THINK imposes no such intervening material and the computation is expected to go through regardless of whether a clausal standard of comparison has a covert operator associated with it. Rather, the contrast between (4.4) and (4.5) is what is important for interpreting the results. (If for some reason (4.4) had not gone through, we would have to look elsewhere for an explanation as to why (4.5) did not go through.) These results as a whole are indicative that the MORE-construction can take clausal standards of comparison that contain a covert wh-operator for binding a degree variable. However, as already noted, these findings are extremely limited in scope and are, therefore, not conclusive.

That being said, they do indicate that the standard of comparison can be a clausal constituent even if they are not clausal standards of comparison. As can be seen by expanding the number of consultants' responses considered from Table 4.15, THINK is consistently allowed within the standard of comparison. What we cannot tell from these results is whether a covert operator is present or whether it may be the case that the clause is type-shifted to an individual and hence, the standard marker nevertheless selects for a phrasal standard of comparison.

On the whole, the evidence suggests that it is possible for the standard of comparison to be a clause, but it does not answer whether the standard marker selects for clausal standards or not. The possibility is still left open that the standard marker actually selects for phrasal standards and apparent cases of clausal standards actually involve some kind of type-shifting. Further work would be needed to reach a stronger conclusion.

4.4 Syntactic and semantic analysis of the ASL MORE-construction

Before we discuss why the results above are consistent with the analysis presented at the end of chapter 2 for the MORE-construction, I want to discuss possible reasons why two of the consultants strongly disliked the construction. Given the consistency with which the two consultants rejected the MORE-construction, one obvious conclusion is that there is significant dialectal variation concerning the construction. Another obvious possibility is that there are significant generational differences concerning the construction. However, based on the comments of the signers themselves and further comments from some of the consultants who generally accepted the MORE-construction, I think the more likely explanation involves a complex set of sociolinguistic factors rather than the consultants actually lacking the construction in their grammar altogether.

In particular, these two signers seemed to perceive the MORE-construction as a calque, or a direct loan translation, from English. (Whether the ASL MORE-construction actually is historically or currently a calque is less relevant for the current discussion than the fact that (at least some) signers perceive it to be one.) Both consultants who consistently rejected the MORE-construction either directly said it felt English-y, that they see it occasionally but do not use it, and/or simply observed that they generally dislike the construction. Other signers who accepted the construction still sometimes noted that it seemed English-y or was associated with academic ASL. This perception may be further bolstered by the fact that, unlike the BEAT-construction which heavily utilizes space in a way unique to ASL and other signed languages (see §1.1.2), the MORE-construction largely relies on word order and can be translated directly back and forth between English and ASL with minimal adjustments. In other words, the form of the MORE-construction doubly associates it with things like Signed English rather than ASL.

This suggests that general rejection of the MORE-construction could be the result of disassociation as a method of identity marking and construction and/or some kind

of code-switching, whether between languages or registers. It is particularly important to remember the historical and social context of ASL discussed in §1.1.1. There is a long history of suppression of ASL in the education systems and of marginalization of the D/deaf in the United States. It is possible some signers would reject a construction they perceive on a conscious level of being (from) English regardless of whether and how they use the construction when signing in ASL. This could be a means of increasing and creating stronger differences between the two languages in order to further build a unique language identity for ASL. It is also possible that comments about the construction being English-y are an indicator of signer awareness of a particular type of code-switching[5] involved in using the construction.

The belief that rejection of this construction has more to do with complex social issues than with their internal grammar of the construction comes from the spontaneous use of the construction by one signer during the course of the interview. This consultant in particular rejected the MORE-construction almost across-the-board when asked about it directly, but nevertheless signed the following in an effort to seek clarification at one point:

(4.6) Use of MORE-construction by participant who judged it largely ungrammatical

Context: Clarifying intended meaning of BRUNO BEAT 200 LB HEAVY

$\overline{\text{BRUNO MORE THAN 200 LB}}^{\text{pol q}}$

'(Does it mean that) Bruno (weighs) more than 200 pounds?'

Note that as discussed in §3.5, the interviewer was Deaf. There is no possibility here that the consultant was simply accommodating a non-native signer belonging to the Hearing English culture. Also note that the signer was not providing an example that they then went on to discuss. This was a spontaneous, unsolicited question the signer

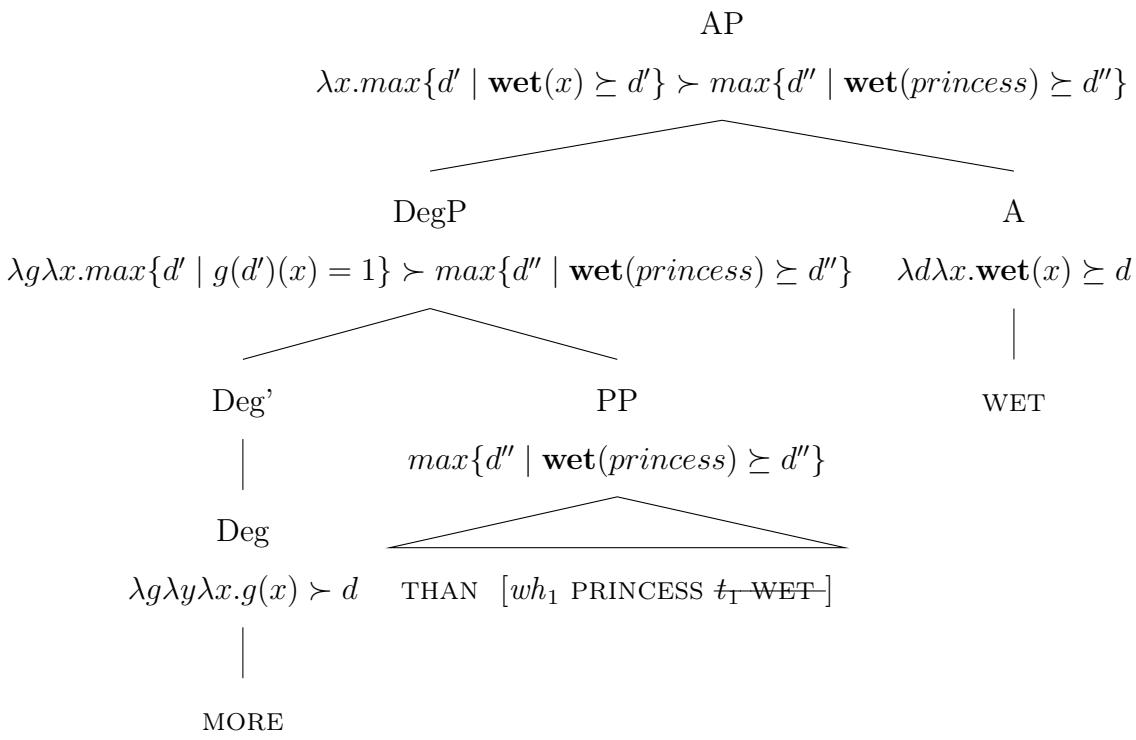
[5]A brief word about the term code-switching. It is used quite differently in different subfields. In work on bilingualism, it most often refers to switching between two distinct languages shared by the participants of the conversation. In fields more concerned with the formation of identity, it tends to be used to indicate a switch in dialect, particularly between privileged and disadvantaged dialects. (This latter use in particular seems more prominent in the title of National Public Radio's blog/podcast section "Code-Switch," for instance, though the show touches on both uses in its Frequently Asked Questions.) Here I mean it in a broad sense encompassing both sets of ideas and their shared assumption that the act of code-switching itself communicates information.

produced in order to seek clarification of another structure. This example constitutes a use and not a mention of the construction. Such an example that directly contradicts the signer's grammaticality judgments indicates that complex socio-linguistic factors beyond dialect and age come into play. While I leave the exact reasons behind these discrepancies to further research, I believe this telling example points clearly towards the need to disentangle questions of identity formation, code-switching, and the extent to which the MORE-construction–assuming it is a calque–has been assimilated into ASL.

Further complicating matters, the MORE-constructions seems to improve in some cases when either MORE or THAN is elided (Wood, p.c.), though which cases require which lexeme to be omitted is unclear. However, Susan Fischer (p.c.) observes that only THAN seems more likely to be present in cases comparing clauses rather than adjectives. Additional work with well-balanced corpus would be required to further tease apart some of these issues, but while there is some work towards various ASL corpora, one with the capabilities needed for such research questions is something that, to the best of my knowledge, is still lacking.

Having discussed the findings that indicate complex socio-linguistic factors interact with signer judgments, let us move on to comparing how the results presented above comport with the analysis proposed at the end of chapter 2, namely that the ASL MORE-construction will have a syntax and semantics similar to that of English canonical comparatives of superiority. This analysis is represented by (4.7), which matches that of (2.19 for the sake of consistency), but with the ASL MORE-construction example we first encountered in (1.1) inserted in place of the English.

(4.7) Proposed analysis for ASL MORE-construction, following Kennedy (2007)



So far, the evidence seen is consistent with this analysis. Namely, the clausal boundaries and constituency structure tests confirm that the construction is comprised of one matrix clause that corresponds with the presumed form of the construction, the comparative predicate behaves as part of a complex unit, degrees are present in the construction and the standard of comparison directly introduces a degree rather than manipulating a contextual variable, and there is some indication that the standard marker selects for clausal comparatives with covert wh-operators.

With respect to clausal boundaries and constituency structure, we expect to find that the comparee can undergo WH-doubling, but that the comparative predicate should not, given the initially proposed analysis. And indeed this is what we found.

The comparee in the MORE-construction is able to undergo WH-doubling, as shown in (4.8).

(4.8) WH-doubling of comparee in ASL MORE-construction

$\overline{\text{WHO MORE BEAUTIFUL THAN QUEEN WHO}}^{\text{wh}}$

The important implication from this is that we can have confidence that we have the construction narrowed down to a single matrix clause.

Furthermore, we see that the comparative predicate is not be subject to A'-bar movement, as observed with respect to WH-doubling, which the comparative predicate of the MORE-construction could not undergo (4.9).

(4.9) WH-doubling of comparative predicate in ASL MORE-construction
*HOW SNOW-WHITE MORE BEAUTIFUL THAN QUEEN HOW
wh

Given the proposed analysis, it seems likely it is because it forms a complex constituent with the degree morphology, that is it is not a fully independent constituent and is behaving similarly to a complement. This is a point that will become particularly striking when we review the results of the BEAT-construction in the next chapter and which we will return to again in chapter 6 to discuss further.

Results from this study further comport with the predictions from the initially proposed analysis of the MORE-construction with respect to the second research question about the presence of degrees. In particular, the analysis under consideration predicts that differential degree phrases, and degree comparisons should be compatible with the semantics of the MORE-construction and that the construction should not give rise to (anti-)norm-relatedness readings. Furthermore, regardless of whether subcomparatives require standard markers that select for clausal standards of comparison, the current analysis also predicts that subcomparatives should be possible with the ASL MORE-construction. We find that the results for all of these points concerning the presence of degrees in the construction are as predicted.

Because the analysis being considered for the MORE-construction here has two overtly supplied degrees, there is a gap of degrees available that a differential phrase can modify, meaning that the presence of differential degrees should be licensed by the MORE-construction. We see that this is possible in items such as (4.10), where the differential phrase 2-INCHES describes the gap between the degree associated with Bruno's height and the degree associated with Karl's.

(4.10) Example of degree differential phrase in ASL MORE-construction

BRUNO 2-INCHES MORE TALL THAN KARL

'Bruno is 2" taller than Karl'

If there were no degrees, particularly if there were not two degrees in the construction, then there would be no degree gap for the differential phrase to modify in the first place.

Furthermore, because the adopted analysis assumes that the MORE-construction takes a degree-type, we also expect the construction to be able to form degree comparisons in a straightforward manner. As can be seen by (4.12), this is the case.

(4.11) Example of degree comparison in ASL MORE-construction

BRUNO MORE TALL THAN 6' 3"

'Bruno is taller than 6-feet, 3-inches.'

We also expect based on the proposed analysis that the MORE-construction will not exhibit (anti-)norm-relatedness readings induced by the construction itself, which is is consistent with what we saw in §4.2.3. It did not matter whether the comparee or the standard of comparison were contextually defined as BIG, SMALL, or somewhere in between. Regardless, they could be used in the MORE-construction with the comparative predicate BIG. However, as noted, the results from this test relied primarily on the responses of one signer and are not as robust as the results for the other tests covered so far.

The last finding with respect to the presence of degrees in the construction concerned the acceptability of subcomparatives. It was anticipated that the MORE-construction should be able to form them. The proposed analysis assumes that the MORE-construction forms clausal comparisons, so if the main licensing condition is a comparison of degrees, the MORE-construction by hypothesis should be able to form them. Furthermore, if the more important corollary for being able to form subcomparatives is the accessibility of the type of morpheme used to license measure phrase constructions, the prediction is still likely to hold for the MORE-construction as it is

well-documented that ASL has such constructions particularly with respect to age. Results for this test were not as consistent and appeared to be subject to a lot of signer variation and to be even more contextually sensitive than some of the other items tested in this study. For now, the most conservative conclusion is that judgments regarding subcomparatives are mixed (4.12).

(4.12) Example of subcomparative with ASL MORE-construction

✓/* DOOR A TALL MORE THAN DOOR B WIDE

'Door A is taller than Door B is wide.'

The issue of subcomparatives and the interpretation of results concerning them is a matter we will revisit when we compare the MORE and BEAT constructions against each other in chapter 6. However, given that the construction is not uniformly rejected and that there was so much variation between signers on this point, I would argue that for the time being it is reasonable to interpret these results as consistent with the proposed analysis.

The last question to be evaluated with respect to the proposed analysis for the MORE-construction regards the selectional properties of the standard of comparison. For evaluating these selectional properties, the most important question is whether there is any evidence that a covert operator is present. By hypothesis, we expect the standard in the MORE-construction to (sometimes) contain a covert operator due to the presence of a variable that needs to be bound in cases involving a clausal standard. Results from the time adverbial tests indicate that the standard of comparison can be a clause, but do not tell us if the standard contains the requisite wh-operator. WH-doubling of the comparee and question-embedding predicate items indicate that such a covert operator may be present. However, as mentioned previously, the results for this particular research question were overall more indicative than conclusive; they are not robust.

Our first expectation on the current analysis is that if a clause can serve as the standard of comparison, then it should be able to have a time adverbial of its own associated with it. Results are consistent with this expectation, but are not uniform

(4.13), with two of the four signers who accepted the MORE-construction accepting the item and two finding it marginal.

(4.13) Time adverbials in standard of comparison in ASL MORE-constructions

✓/?? M-A-R-Y MORE TALL THAN 5-YEAR-PAST

'Mary is taller than (she was) 5 years ago.'

Taking these results as generally indicative that the standard of comparison can be comprised of a clause, we still need further evidence to indicate whether the standard of comparison is actually clausal, that is whether the comparison is of a degree-type. As discussed in chapter 2, this requires evidence of a (covert) wh-operator.

We see some evidence of a (covert) wh-operator in the MORE-construction from both this both items concerning WH-doubling of the standard of comparison (4.14) and wh-island tests (4.15).

(4.14) Ungrammatical WH-doubling of standard of comparison in ASL MORE-construction

* $\overline{\text{WHO SNOW-WHITE MORE BEAUTIFUL THAN WHO}}^{\text{whq}}$

(4.15) Wh-island effects in ASL MORE-constructions

a) M-A-R-Y MORE TALL THAN IX-1 THINK/∼WONDER

Mary's taller than I thought/wondered.

b) M-A-R-Y MORE PRETTY THAN IX-1 THINK/*WONDER

*Mary is prettier than I thought/*wondered.*

The first indication that there may be a (covert) wh-operator present in the MORE-construction is the inability of the standard of comparison to undergo WH-doubling, as shown in (4.14). As discussed in §3.1.1 and 3.3.1, one of the reasons that WH-doubling of the standard may fail is if there is an intervening clausal phrase projection with a (covert) wh-operator in the spec of C. However, as also mentioned in §3.1.1 and 3.3.1, there are other reasons A'-bar movement may fail. So while (4.14)

provides some reason to suspect that a (covert) wh-operator may be present (and that if so, that the standard in the ASL MORE-construction is actually obligatorily clausal), it does not provide conclusive proof. For further evidence, we have to look at the results of the wh-island test items. For the one signer who exhibited the prerequisite wh-island distinction between (semi-)factive predicates like THINK and question-embedding predicates like WONDER, there was evidence that the standard of comparison in the MORE-construction was sensitive to island effects (4.15). While these results are overall consistent with the proposed analysis, they are also not as robust as we would prefer, either, mostly relying on the judgments of a single signer. For that reason, it would be better to say that the results indicate the MORE-construction has a clausal standard of comparison rather than that the results conclusively show such to be the case.

4.5 Evidence sufficient to adopt analysis as working hypothesis

Altogether, the evidence from the WH-doubling tests are consistent with the proposed syntax of the ASL MORE-construction, namely that the stylized structure in (4.16) is indeed a single matrix clause and furthermore, that the comparative predicate and comparison marker form a complex constituent. However, it should be noted that some variation with respect to the presence of either MORE or THAN has been observed and it is unclear at this time what drives the preference or obligatoriness of each lexeme in the construction.

(4.16) Stylized form of ASL MORE-constituent

[comparee MORE comparative_predicate THAN standard_of_comparison]CP

Results from this study coming from differential degrees, degree comparatives, and norm-relatedness tests are consistent with the proposed semantics, showing rather conclusively that the construction makes use of degrees in its derivation. Results from the subcomparatives test were highly variable, but are also consistent with the currently proposed semantics. Finally, tests for the presence of a covert wh-operator,

while not conclusive, were indicative of and consistent with the hypothesis that the standard marker for the MORE-construction selects for clausal comparatives. It should be born in mind that this study only looked for evidence of clausal comparatives and did not test extensively for a clausal/phrasal split and it is unclear whether apparent phrasal comparatives formed with the ASL MORE-construction should be viewed as underlyingly clausal or are actually phrasal. Issues concerning the selectional properties of the standard marker are an area that particularly need further research. However, the results of this study as a whole support continuing to use a degree-type analysis for the ASL MORE-construction as a working hypothesis for further research.

5. ASL BEAT-CONSTRUCTION

Now that we have examined and discussed the results for the MORE-construction, it is time to turn our attention to the results for the BEAT-construction. As with the MORE-construction, we will examine the results test by test with respect to each research question and then discuss how they comport with the analysis put forward at the end of chapter 2. As we shall see, these results generally indicate that the BEAT-construction 1) is comprised of a single matrix clause and has a comparative predicate that exhibits adjunct-like behavior, 2) makes use of degrees, 3) is not interpreted with respect to norm-relatedness, and 4) most likely selects for phrasal standards of comparison. Additionally, we will see evidence that there may be a viable ambiguous structure where the adjective present alongside the BEAT verb is actually modifying the comparee or standard of comparison rather than serving as a comparative predicate, that is where the adjective is attached to the noun rather than to the verb.

5.1 Constituents and clause boundaries for BEAT-construction

Again, our first research question is simply where are the clausal boundaries and what is the basic constituency structure of the construction under investigation? For the BEAT-construction, attempts at WH-doubling were made on the comparee, the standard of comparison, the comparative predicate, as well as the standard marker as a means of addressing this question. As we shall see, the results suggest that 1) there are (at least) three surface structures for the construction, 2) the status of the standard of comparison is not entirely clear; it behaves as though it incurs movement violations in at least some cases, but does not do so consistently and 3) the comparative predicate, as well as the comparee and standard of comparison, forms

an independent constituent. All of these are consistent with the syntactic analysis presented, but also point to an alternative ambiguous structure that may sometimes be available.

5.1.1 Evidence for multiple surface structures for BEAT-construction

Results from testing WH-doubling of the comparee in ASL BEAT-constructions showed that there are (at least) three distinct surface structures that are each comprised of only one matrix clause.

In Table 5.1, we see that the comparee can undergo WH-doubling regardless of whether the comparative predicate occurs only after the standard of comparison, only after the comparee, or after both the comparee and the standard of comparison. The first two options with the comparative predicate provided only once, but differing

Table 5.1.: Results for WH-doubling of comparee in ASL BEAT-construction

Item	1	2	3	4	5	6
$\overline{\text{WHO BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$	✓	✓	∼	✓	✓	∼
$\overline{\text{WHO BEAUTIFUL BEAT QUEEN WHO}}^{\text{whq}}$	✓	✓	∼	∼	✓	✓
$\overline{\text{WHO BEAUTIFUL BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$	✓	✓	?	*	*	✓

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

in whether it followed the comparee or the standard of comparison had relatively good agreement between signers.[1] There was less general agreement when the comparative predicate was specified twice, with two consultants outright rejecting the possibility rather than finding it only marginally acceptable.

Recall that in §3.1.3 we established that the results of the WH-doubling test with respect to the comparee should be interpreted as follows:

[1]Though the second consultant mostly found the cases under consideration marginal, the same consultant found WH-doubling marginal at best and explicitly remarked that they did not care for using the doubling construction more generally; so in this case the marginal judgments are considered consistent with the grammatical judgments given by other consultants.

1) If doubling of the comparee fails, then the construction is composed of more than one matrix clause; however, if doubling of the comparee succeeds, then the construction is composed of one matrix clause.

We find then that there are three possible surface structures associated with BEAT, each comprised of a single matrix clause. These surface structures can be stylized as follows:

- *comparee comparative_predicate* BEAT *standard_of_comparison comparative_predicate*
- *comparee comparative_predicate* BEAT *standard_of_comparison*, and
- *comparee* BEAT *standard_of_comparison comparative_predicate*

What is less clear at this point is whether all three of these surface structures should be analyzed as having the same underlying structure, potentially ambiguous underlying structures, distinct underlying structures, or some combination thereof. This is a point that will become clearer as we examine evidence beyond that of WH-doubling of the comparee and that we will continue to revisit.

5.1.2 Initial evidence for syntactic ambiguity in BEAT-constructions

The results from WH-doubling of the standard of comparison in the BEAT-construction are more difficult to interpret. There is evidence that the standard incurs movement violations in at least some cases for at least some signers.

As can be seen in Table 5.2, doubling of the standard of comparison is not always successful. Recall that interpreting the WH-doubling tests for the standard of comparison relies first on the results of the WH-doubling tests for the comparee, as can be seen in:

2) If doubling of the comparee succeeds, then if doubling of the standard of comparison succeeds, the standard is allowed to be phrasal, whereas if it fails, then the standard of comparison has committed some kind of movement violation, possibly due to being within a dependent clause with a covert operator.

Table 5.2.: Results for WH-doubling of standard in ASL BEAT-construction

Item	1	2	3	4	5	6
$\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT WHO}}^{\text{whq}}$	*	✓	?	∼	∼	*
$\overline{\text{WHO SNOW-WHITE BEAT BEAUTIFUL WHO}}^{\text{whq}}$	✓	*	*	*	✓	∼
$\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT BEAUTIFUL WHO}}^{\text{whq}}$	*	*	*	*	*	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

As we saw in the previous section (§5.1.1), doubling of the comparee succeeds in all three of the different cases tested here: when there is one instance of the comparative predicate occurring after the comparee, one instance of the comparative predicate occurring after the standard of comparison, and when there are two instances of the comparative predicate with one occurring after the comparee and one after the standard of comparison.

Doubling of the standard of comparison is consistently rejected in cases where the comparative predicate occurs twice, indicating that in those cases it may exist in some kind of syntactic island, but that it definitely incurs some kind of movement violation. Judgments in cases where the comparative predicate occurs only once, however, received mixed judgments. There does, nevertheless, appear to be a pattern to those judgments. Signers seem to allow the standard of comparison to undergo WH-doubling either when the comparative predicate occurs after the comparee or when it occurs after the standard marker, but not both.

Altogether, this suggests there may be at least two distinct underlying constructions, one in which the comparative predicate occurs twice and one in which it occurs only once. For now, let us refer to them by the number of times the adjective is present in the construction. So we will call the structure with two adjectives BEAT-2 and the structure with one adjective BEAT-1. The standard of comparison appears to clearly incur some kind of movement violation when extracted from the BEAT-2 construction. The BEAT-1 construction, however, may be structurally ambiguous be-

tween being a case of BEAT-2 where one of the adjectives has been elided and being a true case of BEAT-1, with only one adjective ever present in the structure.

Reasons why this could be the case and why it would actually explain the apparent patterning we see with respect to consultants generally not accepting both instances of BEAT-1 will become even more apparent after we examine the results of the WH-doubling test for the comparative predicate. For now, what is important is we are moving towards an analysis where there are two distinct syntactic constructions, with some surface forms that are likewise distinct, but some surface forms that are ambiguous between the two underlying representations.

5.1.3 Evidence for comparative predicate as an independent constituent in BEAT-constructions

The next WH-doubling test targeted the comparative predicate. Recall that the most general interpretation of the WH-doubling results was as follows:

3) Furthermore, any part of the construction that can be targeted with WH-doubling forms an independent constituent.

As can be seen in Table 5.3, consultants rather consistently accepted WH-doulbing of the comparative predicate. These results, therefore, indicate that the comparative

Table 5.3.: Results for WH-doubling of predicate and marker in ASL BEAT-construction

Item	1	2	3	4	5	6
$\overline{\text{HOW SNOW-WHITE BEAT QUEEN HOW}}^{\text{whq}}$	✓	✓	∼	✓	✓	✓

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

predicate forms an independent constituent in the BEAT-construction.

While the comparative predicate was rather consistently allowed to undergo WH-doubling, the ability to answer the question with only the relevant comparative predicate varied somewhat by signer. Consultant 1, for example, allowed the comparative

predicate could undergo WH-doubling, but indicated that the appropriate answer to the question required including the standard marker rather than the comparative predicate in isolation (5.1).

(5.1) Response to WH-doubling of comparative predicate in ASL BEAT-construction for Consultant 1

a) $\overline{\text{HOW EVA BEAT BRUNO HOW}}^{\text{whq}}$

b) *TALL

c) TALL BEAT

Consultant 2, however, allowed for the comparative predicate (BEAUTIFUL) to serve as an answer to the WH-doubling question by itself. These responses not only further indicate that the comparative predicate forms an independent constituent in the BEAT-construction, but also assure us that the results for the WH-doubling test targeted the appropriate interpretation and were not accepted under a reading of *In what way did Snow-White beat the queen?* but were instead accepted under a reading of *Along what dimension did Snow-White beat the queen?*

This ability to form an independent constituent indicates the comparative predicate behaves more like an adjunct than a complement in the BEAT-construction, particularly when taken together with reports in Wilbur et al. (2018) that the comparative predicate can sometimes be elided. In general, adjuncts are optional and do form fully independent constituents.

This may provide a crucial key to better understanding the results in the previous section regarding WH-doubling of the standard of comparison. Note that the items involving WH-doubling of the comparative predicate all concern, essentially, the BEAT-1 form. Nothing along the lines of (5.2), which would have targeted the BEAT-2 form, was tested.

(5.2) Untested items for WH-doubling of the comparative predicate in BEAT-2 construction

a) $\overline{\text{HOW SNOW-WHITE BEAT QUEEN BEAUTIFUL HOW}}^{\text{whq}}$

Intended: Along what dimension does Snow-White exceed the queen?

b) $\overline{\text{HOW SNOW-WHITE BEAUTIFUL BEAT QUEEN HOW}}^{\text{whq}}$

Intended: Along what dimension does Snow-White exceed the queen?

This means that we actually only know how the comparative predicate behaves with BEAT-1 (and note that we are unable to distinguish whether that one occurrence occurs before or after the standard marker BEAT prior to movement in the WH-doubling construction).

Let us take what we know, that in (at least some cases of) BEAT-1 the comparative predicate behaves more like an adjunct, and assume for a moment that 1) BEAT-2 and BEAT-1 have different underlying structures and 2) that BEAT-1 is sometimes ambiguous with BEAT-2 due to the possibility of elision, and furthermore, that BEAT-2 does not treat either instance of the adjective as an adjunct (presumably to the verb). Let's further assume that there may be dialectal and/or individual variation with respect to whether the comparative predicate should be left- or right-adjoined.

In this case, a signer's individual preference for left- or right-adjunction would then dictate which variation of BEAT-1 can be interpreted as structurally ambiguous with BEAT-2. To illustrate, for a signer who has left-adjunction of the comparative predicate to BEAT-1, that is for whom BEAT-1 has the form *comparee comparative_predicate* BEAT *standard_of_comparison*, the only viable interpretation of right-adjoined version with the form *comparee* BEAT *comparative_predicate standard_of_comparison* would be that it is a case of BEAT-2 where the first adjective has been elided. This in turn will make them more likely to reject WH-doubling of the standard of comparison when the comparative predicate occurs after BEAT rather than before it, or at least does so if we allow for the assumptions that 1) some apparent cases of BEAT-1 are actually cases of BEAT-2 with an elided adjective, and that 2) BEAT-2 and (true) BEAT-1 have fundamentally different underlying constructions and that only in the case of BEAT-2 does the apparent standard of comparison incur

a movement violation. This would make individual responses internally consistent as well as consistent between signers; most of the signers only reject one of the two cases involving WH-movement of the standard of comparison with only one adjective while accepting the other. However, all signers reject cases involving two instances of the adjective. In cases not involving WH-movement, (true) BEAT-1 could still be ambiguous with BEAT-2, however. We have not attempted to constrain how or when elision of the adjective in BEAT-2 can occur. We will return to these issues of structural ambiguity later in the chapter when we discuss the results with respect to the proposed analysis.

5.1.4 Standard marker does not form independent constituent for ASL BEAT-construction

For now, however, let us return to the question of which parts of the BEAT-construction can form an independent constituent. We have already seen evidence that the comparee, standard of comparison, and comparative predicate form indpendent constituents. WH-doubling tests with the standard marker, however, suggests that it is not a fully independent constituent in the BEAT-construction.

The last WH-doubling test for the BEAT-construction involved the standard marker. Results of this test are shown in Table 5.3. As can be seen, WH-doubling of the stan-

Table 5.4.: Results for WH-doubling of standard marker in ASL BEAT-construction

Item	1	2	3	4	5	6
whq: #DO-DO SNOW-WHITE QUEEN #DO-DO	*	*		*	∼	*
whq: #DO-DO SNOW-WHITE QUEEN BEAUTIFUL #DO-DO	*	*	*	*		*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

dard marker was consistently judged ungrammatical, indicating that the standard marker does not form a fully independent constituent within the BEAT-construction.

We can be fairly confident that these items were not rejected simply due to BEAT being a transitive verb. Not only does the analysis of WH-doubling in Petronio (1993) indicate transitive verbs should also be subject to doubling, but also piloting work with the first consultant verified that this was possible.

(5.3) WH-doubling of transitive verb for Consultant 1

whq

#DO-DO PADDINGTON MARMALADE #DO-DO

Intended: What did Paddington do *with the marmalade (sandwich)?*

(5.3) was provided in a similar context as the WH-doubling tests used in this study where one is telling a story to children and verifying their comprehension and attempting to keep them engaged. In (5.3), the relevant story is that of Paddington bear, who is well-known in children's literature for his love of eating marmalade sandwiches. The expected answer would be the transitive verb *eat*. We can therefore be reasonably assured that the inability of the standard marker BEAT to form an independent constituent is not due to its being a transitive verb, but results somehow from the construction itself.

5.1.5 Review of WH-doubling test results for the BEAT-construction

To review, results from the WH-doubling tests show us that we have at least three distinct surface forms that all use BEAT as a standard marker, that the standard of comparison is in a syntactic island in at least some cases, and that in addition to the comparee and the standard of comparison, the comparative predicate is also capable of forming an independent constituent, but the standard marker BEAT does not. Most importantly, we have seen some evidence that there may be two distinct underlying representations and that some surface forms may be ambiguous between the two. However, which surface forms may be ambiguous for a particular signer should be contingent on their left-/right- adjunction preference for BEAT-1. Only cases involving a single adjective in their adjunction site preference might be eligible

for ambiguity; cases involving a single adjective in the location they do not prefer for adjunction are expected to mostly receive a reading of BEAT-2 by default.

5.2 Evidence for presence and location of degrees in the BEAT-construction

The second research question addresses whether there is any evidence that degree phrases exist in the BEAT-construction's derivation. To answer this question, we now turn to the results of a battery of tests involving degree differentials, degree comparisons, subcomparatives, and degree competition. As we shall see, the results generally point in the direction of the BEAT-construction is compatible with degrees.

5.2.1 Degree differentials

The first test for the presence of degrees involved examining whether the BEAT-construction was compatible with a degree differential phrase, a measure phrase which specifies the extent to which the comparee exceeds the standard of comparison. Wilbur et al. (2018) have previously reported that degree differentials are possible in ASL, but only provide one example with a measure phrase that does not require support from the lexeme MORE. As we shall see, there appear to be word ordering issues, some of which possibly stem from the phonology of the standard marker BEAT, which made receiving judgments on this point difficult. All the same, the data collected in this study further validates the finding that ASL BEAT-constructions allow degree differentials. Crucially, the results further validate that MORE is not necessary to license the degree differential providing us with evidence that degrees are involved at some point in the derivation of the BEAT-construction.

The results for the degree differentials tests, shown in Table 5.5,[2] indicate that they are allowed with the BEAT-construction, but with some important qualifications. The first and sixth consultant most consistently allowed degree differential phrases

[2]All items were presented to all signers with comparative predicates present. Some items were additionally presented without the comparative predicate, which sometimes impacted reported judgments.

Table 5.5.: Results for degree differential tests in ASL BEAT-construction

Item	1	2	3	4	5	6
BRUNO BEAT KARL HEAVY 20LB	✓(with HEAVY)	*	*	*	*	*
BRUNO BEAT KARL TALL 2-INCHES	✓(with TALL)	*	*	✓	*	∼
BRUNO BEAT KARL OLD 5-YEARS	✓	*	*	*	*	*
BRUNO 20LB BEAT KARL HEAVY	*	*	*	*	*	∼
BRUNO 2-INCH BEAT KARL TALL	*	*	*	✓	*	*
BRUNO 5-YEAR BEAT KARL OLD	*	*	*	*	*	*
TODAY 5-DEGREES BEAT YESTERDAY (HOT)	✓	*	*	∼	*	✓
BRUNO BEAT KARL 20LB HEAVY	*	*	*	*	*	✓
BRUNO BEAT KARL 2-INCHES TALL	*	*	*	✓	∼	✓
BRUNO BEAT KARL 5-YEARS OLD	*	*	*	*	*	✓
TODAY BEAT YESTERDAY 5-DEGREES HOT	*	*	*	✓	✓	✓
TODAY 5-DEGREES HOT BEAT YESTERDAY	*	∼	*	*	✓	✓
TODAY HOT BEAT YESTERDAY 5-DEGREE	✓					

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

with the BEAT-construction, though they differed as to whether they preferred the measure phrase to be located utterance finally or before the comparative predicate. Consultant 4 exhibited sensitivity to the comparative predicate, allowing the degree differential phrase with TALL but generally dispreferring it with other comparative predicates. 5 also appeared to show sensitivity to the comparative predicate, seeming to allow it with only HOT. And while 2 rejected the differential phrase in the various word orders preselected for the test items, they were able to construct an utterance with BEAT that included a degree differential phrase (5.4).

(5.4) Example differential phrase with ASL BEAT-construction

KARL HEAVY BRUNO HEAVY BEAT 20 LB WOW [3]

'Bruno's weight beats Karl's weight by 20 lbs./Karl is heavy. Bruno is (really) heavy. Bruno beats Karl by 20 lbs.[4]

[3]There were obvious phonetic differences between the HEAVY associated with Karl and the HEAVY associated with Bruno. Unclear if these constitute a morphemic difference or not.

[4]Without clausal boundary tests, it is unclear to me which translation would be more accurate with respect to the syntax.

In this case, the preference to move the standard of comparison forward so that it occurs before the standard marker BEAT may simply be to facilitate agreement marking on the predicate BEAT. That explanation for the movement of the standard marker aligns with remarks from the third consultant, who frequently commented on issues with not having comparee and standard of comparison already set up in space before using BEAT. Given five of the six consultants were able to use differential degrees with the BEAT-construction and that there may have been complicating factors involving word order that would explain the ungrammatical judgments of the other consultant, it seems we can assume that the BEAT-construction does indeed allow degree differentials.

Recall that the interpretation of the degree differentials tests laid out in §3.2.1 was as follows:

1) If degree differentials are judged grammatical for a construction, then the construction should have degrees available at some point in its derivation, whereas incompatibility with degree differentials indicates the construction does not involve (multiple, explicit) degrees.

Given the conclusion that the BEAT-construction allows degree differentials, then we also conclude that the construction has (multiple, explicit) degrees available at some point in its derivation. However, as seen by the variability in the responses recorded in Table (5.5), there may be additional complicating factors that require further investigation and care should be taken in expanding upon this particular conclusion.

5.2.2 Degree comparisons

The next test for probing for the compatibility of the BEAT-construction with degrees was to see whether the BEAT-construction could take degree phrases directly as the standard of comparison. As degree comparisons involving the BEAT-construction have been described in Wilbur et al. (2018), the main goal here was to cross-validate

the finding that the BEAT-construction cannot directly form a degree comparison (5.5),

(5.5) *BRUNO BEAT 6' 3"

but rather requires additional supporting morphology in the form of the free lexeme FINISH located prior to the standard marker BEAT (5.6).

(5.6) BRUNO TALL FINISH BEAT 6' 3"

If this is the case, it would be good evidence that the standard marker selects for phrasal standards, making use of supporting morphology in order to type-shift. (Recall that a measure phrase selecting standard marker can be derived from a clausal selecting standard marker; therefore, we would not expect the BEAT-construction to require any additional support to form a degree comparison if the standard marker selected for clausal standards of comparison.) However, results for the degree comparisons test were mixed with respect to cross-validating this previous finding. What was found is that degree comparisons are acceptable in at least some cases with the BEAT-construction, showing that the construction likely involves degrees.

Most consultants accepted degree comparisons in at least some cases, but which cases varied a good deal, as can be seen in Table 5.8. The third consultant was the only one who consistently disliked the degree comparisons. The sixth consultant accepted some of the degree comparisons, but does not appear to have a clear pattern in their preferences. The first and fifth most consistently preferred that FINISH be present to facilitate the degree comparison, consistent with reports in Wilbur et al. (2018). However, the second consultant freely allowed degree phrases to serve as the standard of comparison directly and judged utterances with the additional lexeme FINISH to be ungrammatical. The fourth consultant again, exhibited sensitivity to the comparative predicate, mostly judging items with TALL as acceptable and rejecting others. As with the degree differentials, it appears degree comparisons are acceptable with the BEAT-construction but that this conclusion needs to be understood with the qualification that there is a significant amount of variation in judgments.

Table 5.6.: Results for degree comparison tests for ASL BEAT-construction

Item	1	2	3	4	5	6
BRUNO BEAT 6' 3"	*	✓	*	✓	*	*
BRUNO BEAT 200LB	*	✓	*	*	*	*
BRUNO BEAT 70-YEARS		✓	*	*	*	*
BRUNO FINISH BEAT 6' 3"	✓	*	*	∼	∼	✓
BRUNO FINISH BEAT 200LB	∼	*	∼	*	∼	∼
BRUNO FINISH BEAT 70-YEARS		*	*	*	∼	*
BRUNO BEAT TALL 6' 3"	∼	✓	*	✓	✓[1]	∼/*
BRUNO BEAT HEAVY 200LB		✓	*	*	∼	∼
BRUNO BEAT OLD 70-YEARS		*	*	*	∼	∼
BRUNO BEAT 6'3" TALL	*	∼	*	✓	∼	∼
BRUNO BEAT 200LB HEAVY	*	✓	*	*	✓[1]	✓/∼
BRUNO BEAT 70-YEARS OLD	✓	*	*	*	∼	*
BRUNO FINISH BEAT TALL 6' 3"	✓	*	*	✓	✓	*
BRUNO FINISH BEAT HEAVY 200LB	✓	∼	*	*	✓	*
BRUNO FINISH BEAT OLD 70-YEARS	*	*	*	*	∼	✓
BRUNO FINISH BEAT 6' 3" TALL	✓	*	*	✓	∼	*
BRUNO FINISH BEAT 200LB HEAVY	✓	∼	*	*	∼	*
BRUNO FINISH BEAT 70-YEARS OLD		*	*	*	*	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point
[1]with additional NMMs

Recall that the interpretation for the degree comparison test established in §3.2.2 was as follows:

2) If degree comparisons are permitted, then in the least, the language has degrees available and degrees are likely involved in the construction under consideration.

Overall we saw a great deal of variation between signers as to under what conditions degree comparisons were deemed grammatical. It is possible that we are seeing such different patterns because each speaker is resolving a type mismatch using different strategies, namely overt type-shifting, covert type-shifting, and outright rejection, respectively. These may or may not be associated with additional sources of variation such as age and/or dialect. For the time being, we will accept that degree comparisons are possible with qualification and return to this point in the discussion.

5.2.3 Relationship to the positive form

The next test used to further probe the presence and location of degrees was the picture description task designed to determine how the comparative predicate in the BEAT-construction relates to positive and negative forms. In particular, we wish to know whether the positive or negative form is entailed or strongly implied in any way by the use of the BEAT-construction. Though results from the tests used to address this question are not as robust as for other tests in this study, the results do indicate that if there are any norm-related readings implied or entailed by a BEAT-construction, it is not the standard marker BEAT which induces them. Taken with the results of the last two tests which indicate that degrees are present in the construction, these results solidify the claim that the standard of comparison is providing a degree directly rather than manipulating the contextually supplied standard.

Recall that the picture description task devised to address this research question involved examining an image such as that in Figure 5.1 and indicating which people could be used to successfully complete a provided frame, in the case of Figure 5.1, CORA BEAT WHO BIG. Also recollect that what we are looking for with respect to

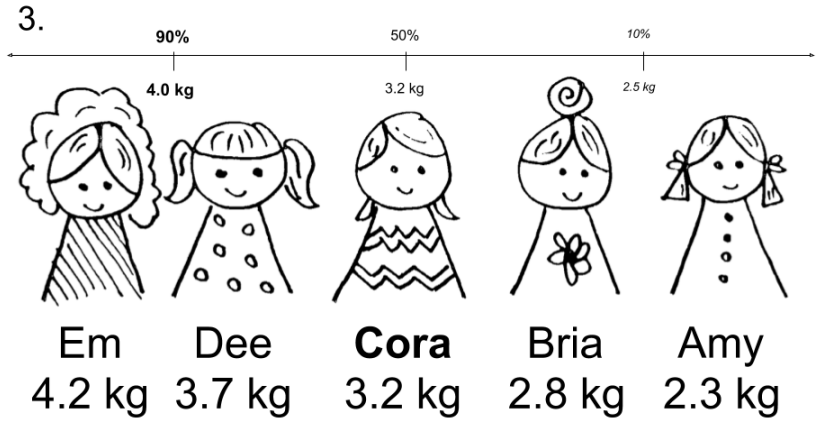


Figure 5.1.: Example of norm-relatedness picture task, repeated from Figure 3.1

interpreting the results from this task is as follows:

3) If the comparative construction under consideration induces (anti-)norm-relatedness readings, then restrictions will emerge as to which children to the right of the comparee in the picture description task can be used as the standard of comparison. Restrictions may also emerge as to which children can serve as the comparee.

As with the MORE-construction, most of the focus here will be on the responses of the first three consultants as technical difficulties with remote data collection impeded full analysis of this task for the other three consultants. However, some relevant data that was recoverable for two of those consultants will be referenced. Analysis of this task for the BEAT-construction was further complicated by the fact that there are at least three surface structures possible and the picture description task was only designed to target one of those surface structures: *comparee* BEAT *standard_of_comparison comparative_predicate*. Complicating matters even further, two of the consultants had difficulties with the task in ways that suggest pragmatic constraints were at play. Nevertheless, the totality of the responses that were available for analysis make it clear that the standard marker BEAT, by itself, does not entail the positive form; however, it does not allow us to confidently rule out the impact that various configurations of the comparative predicate in conjunction with the standard marker might create.

The first consultant had little difficulty with the picture description task. For them, each daughter, except Amy, could be put into the frame BOLD BEAT WHO BIG as the subject. In each case, any daughter of lesser weight (that is any person to the right of the one in bold) could serve as the object of the frame. There was a tendency towards using LIST for purpose of keeping track of referents, but that was expected given the construction of the task.

What was less expected was the difficulty the other two consultants whose data could be more fully analyzed had with the task. For the second consultant, part of the issue stemmed from the fact that they found the question BOLD BEAT WHO BIG to be consistently ungrammatical. However, they were able to use BEAT for comparing several of the daughters in different pictures, as can be seen by (5.7).

(5.7) Responses from second consultant for picture description task with BEAT

a) D-E-E BIG WOW BEAT 3-LIST

b) C-O-R-A BIG WOW BEAT 2-LIST

c) B-R-I-A BIG BEAT AMY

d) A-M-Y BEAT 0_{tm}

Unlike the first consultant, the preference was to put the comparative predicate before the standard marker. It is interesting that this is consistent with how each consultant responded to attempts to double the standard of comparison. (Again, reference Table 5.2.) Regardless, notice that who served as the comparee and who served as the standard of comparison did not seem to matter.

Finally, though the third consultant struggled the most with the task, they also produced an utterance using BEAT in response to describing the pictures that did not seem to make a distinction with respect to who could serve as the standard of comparison. This consultant consistently indicated that they would prefer to already have the referents established in space, particularly because of the context involved, and this was clearly a large part of why they experienced difficulty with the task. However, they did produce one very clearly grammatical utterance using BEAT to describe one of the images (5.8).

(5.8) Response from second consultant for picture description task with BEAT

dominant hand	E-M	BEAT_j	$\#\text{ALL}_j$
non-dominant hand	${}_j$5-LIST	$\rightarrow$	$\rightarrow$

The top line indicates what the signer's dominant hand was doing while the bottom line indicates what their non-dominant hand was doing at the same time. Glosses directly above and below each other were being produced at the same time and an arrow is used to indicate that the sign glossed previously was held in that configuration. Notice that this consultant did not overtly specify the comparative predicate at all. However, distance along the scale between the comparee and the standard of com-

parison did not seem to matter, nor did who served as the standard of comparison. Anyone to the right of the largest child could be used as the standard of comparison.

For the remaining three consultants, there were various technical issues that made their data unavailable for full analysis with respect to the question at hand. As mentioned in the previous chapter, video data for one was lost and the notes taken on this task were not detailed enough to recover the relevant information. For the other two, difficulties with displaying the pictures while they were producing their responses reduces the likelihood that they were paying attention to the contextually established differences in weight between the children.

However, there was an insightful comment produced by the fifth consultant in the completion of this task that is pertinent to the previously raised question of structural ambiguity. This consultant commented that the question associated with the task was weird because it seemed to be asking which child that was big did the comparee exceed in weight. This would seem to indicate that what has been taken as the comparative predicate may be a predicative or attributive predicate in at least some circumstances. In other words, it may sometimes be attached to (one of) the nouns.

Altogether, these results indicate that BEAT alone does not require that the positive form hold for either the comparee or the standard of comparison in order for the BEAT-construction to hold. However, because of the variety of surface structures that can occur with BEAT, we cannot at this time rule out the possibility that at least some of those full surface structures do entail the use of the positive form. In fact, we have evidence that in at least some cases for at least some signers, what appears to be the comparative predicate is actually an attributive or predicative adjective, thus entailing the positive form. However, it does not seem that the semantics of BEAT itself induces a(n) (anti-)norm-relatedness reading.

5.2.4 Subcomparatives

At this point we will turn our attention to the results of the subcomparative tests with the BEAT-construction. Here we are again attempting to verify findings reported in Wilbur et al. (2018): namely, that subcomparatives cannot be formed with the BEAT-construction. The results of this study indicate that this is true of some signers, but is not always the case. The finding that at least some signers allow sub-comparatives with the BEAT-construction provides further evidence that the construction utilizes degrees in its composition.

Unlike what was reported in Wilbur et al. (2018), the results in this study found that subcomparatives are allowed with BEAT-construction for some signers. The full results are shown in Table 5.7.[5] The main thing to note is that acceptance of the sub-

Table 5.7.: Results for subcomparative tests in ASL BEAT-construction

Item	1	2	3	4	5	6
BOB FRIENDLY BEAT EVA SMART	*	*	∼	*	*	∼
EVA SMART BEAT EVA FRIENDLY	*	*	∼	✓	*	✓
TABLE TALL BEAT DOOR WIDE	*	*	∼	✓[1]	*	✓
DOOR WIDE BEAT DOOR TALL	??	*	✓	✓	*	✓
DOOR A TALL-1 BEAT DOOR B WIDE	✓	*	*	✓	*	✓

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point
[1]hs for both

comparative construction, particularly those involving uni-dimensional, relative predicates (TALL and WIDE), seems to be mostly signer-dependent with signers four and six most reliably accepting them and signer three consistently finding them marginal. Signers two and five, however, mostly rejected the construction. And regardless of signer, subcomparatives could not be formed when the comparee is distinct from

[5]Items were most consistently presented with repeated words in the utterance produced twice. Some items were additionally presented with a repeated sign omitted, which sometimes impacted reported judgments.

the standard of comparison and the two dimensions being compared are evaluative (FRIENDLY and SMART).[6]

Another important observation about subcomparatives and the BEAT-construction that was mentioned in §3.2.4 is that some signers have reported in cases involving two dimensions being compared for one entity, the subcomparatives are acceptable if BEAT spatially agrees with the outer extent of the second gradable property (Wood, p.c.). This seems indicative of a nominalization of either the dimension or the degree associated with the entity. In the data here, consultant 6 indicated that while DOOR WIDE BEAT TALL was possible, it felt more natural to add THAN after BEAT and to replace TALL with a related, lexeme formed with both hands using a 1-handshape held in neutral signing space with the dominant hand starting from a point of contact with the non-dominant hand, lifting up into the air, and then returning to a point of contact. We will return to this point in the discussion, but it is important to report here as a qualification of the results concerning the acceptability of subcomparatives with the BEAT-construction.

As was laid out in §3.2.4, the general interpreting principle associated with the subcomparative tests is as follows:

4) If subcomparatives are possible for a given comparative construction, then it definitely involves degrees.

Altogether these results indicate that the BEAT-construction involves degrees, but that the presence of a (covert) subcomparative measure morpheme may not be widespread among users of ASL. This is point we will return to both when we further discuss the analysis of the BEAT-construction at the end of this chapter and also when we compare the MORE- and BEAT-constructions in the next chapter.

[6]There is a reading which was sometimes accepted for these items, which was that the *signer* prefers the character trait exhibited by the first person over that of the character trait exhibited by the second.

5.2.5 Degree modification

The last set of test items involved examining the distributional patterns of morphemes that could potentially require the presence of *pos*, which would be competing for the same degree head. Specifically the *intensive aspect*, which is a bound morpheme, and Y-OO, which is a free lexeme, were tested as possibly having a semantics similar to what has been argued for English *very* (Kennedy & McNally 2005). As mentioned previously, it will not be possible to interpret this test in as straightforward of a manner as the other tests in this section as it relies on distributional, language-specific properties that are not yet fully known. Here, problems of interpretability of the test results were compounded by the limited amount of word order variation presented with respect to the presence and location of the comparative predicate. In the end, the results for this test proved to be inconclusive.

Results concerning items testing the distributional patterns of *intensive aspect* and Y-OO with the BEAT-construction are presented in Table 5.8. While baseline

Table 5.8.: Results for degree competition candidates in ASL BEAT-construction

Item	1	2	3	4	5	6
EVA SMART	✓	✓	✓	✓	✓	✓
EVA SMART$_{intensive}$	✓	✓	✓	✓	✓	✓
EVA Y-OO SMART	✓	✓	?	✓	✓	✓
EVA BEAT BOB SMART$_{intensive}$	✓	✓	*	*	∼	*
EVA Y-OO BEAT BOB SMART	✓	*	*	*	✓[1]	∼
EVA BEAT BOB Y-OO SMART	*	✓		*	∼[1]	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point
[1]better with IX$_a$ at end

items testing the positive form, *intensive aspect*, and Y-OO independent of the BEAT-construction are generally judged grammatical, there is substantial variation in judgments when the *intensive aspect* and Y-OO are combined with the BEAT-construction. Even if we take into account the fact that the third consultant indicated a clear preference for WOW over Y-OO in the baseline items and exclude their response concerning

the compatibility of Y-OO with the BEAT-construction, there is still a substantial amount of variability.

As the differences in the distributional patterns are not fully consistent across signers, it is difficult to be sure how to interpret the results of this set of tests. Remember that to the extent a hypothesis was associated with this set of tests, it ran as follows:

5) If differences in distributional patterns concerning modifiers with meanings similar to *very*, namely *intensive aspect* and Y-OO, particularly if they are disallowed as modifiers of the comparative predicate in a comparison construction, then there is evidence for the presence of degrees in the construction.

Though there are differences in the distributional patterns of *intensive aspect* and Y-OO, what those differences are vary by signer. This makes it difficult to tell whether the ungrammatical cases indicate the requirement that competing degree morphology be present or not.

To complicate matters further, only cases involving one occurrence of the comparative predicate, and that in utterance-final position, were tested. Given the previously noted evidence that there may be more than one possible underlying structure available in cases involving BEAT-1, this makes the results even more difficult to interpret. Interestingly, acceptance of Y-OO when it occurs between the comparee (EVA) and the standard marker (BEAT), do pattern with responses concerning whether the standard of comparison can undergo WH-doubling, with the first, fifth and sixth consultant patterning the most closely together. However, this may be purely accidental, particularly given that the pattern does not hold for the other item containing Y-OO and BEAT that was tested. Altogether, the appropriate conclusion for the time being would seem to be that the results of this particular test are inconclusive with respect to the current research question at hand.

However, given the results we see here and the results we saw with *intensive aspect* and Y-OO when used with the MORE-construction, it does not seem likely that either *intensive aspect* or Y-OO have the same semantics as English *very* even if they are

often used as interlingual translations. This is a point that will be held for further discussion until the next chapter where the MORE- and BEAT-constructions are more explicitly compared to each other, though.

5.3 Selectional properties of the standard marker in BEAT-constructions

The last research question we now turn to is whether we can determine anything about the selectional restrictions of the standard marker, particularly with respect to whether the standard of comparison might be clausal with a covert wh-operator. By hypothesis, such standards are not expected with the BEAT-construction, though a syntactic clause with a semantic type of individual rather than degree might be allowed. Results from the time adverbial tests, WH-doubling of the standard of comparison, and wh-island tests were not as conclusive as could have been hoped. However, the evidence currently available suggests that while the standard is sometimes complex enough to result in movement violations, it is perhaps not actually clausal.

5.3.1 Time adverbial tests

The first issue to be addressed is whether there is any evidence that a clause can serve as the standard of comparison regardless of whether it contains a (covert) wh-operator binding a degree variable. To test this, we turn to the use of time adverbials. The results of this test enjoyed general agreement across signers and suggests, though does not prove, that the standard of comparison is likely to be phrasal.

Recall that the interpretive principle of the time adverbial test results laid out in §3.3 was as follows:

1) If a time adverbial can be used to modify the standard of comparison, then the standard of comparison can contain a clause (though may not be a clausal standard of comparison in the relevant sense). However, if a time adverbial cannot be used to modify the standard of comparison, then it is most likely phrasal.

Essentially, the question is whether the comparee and the standard of comparison can be evaluated at different times, giving evidence that a second tense phrase is available within the standard of comparison. For the test presented to consultants, the results were in general agreement, as can be seen in Table 5.9. All six consultants found the

Table 5.9.: Results for time adverbial test in ASL BEAT-construction

Item	1	2	3	4	5	6
M-A-R-Y BEAT TALL 5-YEAR-PAST	*	*	*	*	*	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

placement of a time adverbial within the standard of comparison to be ungrammatical. One note of caution should be sounded about interpreting these results, however. As we saw in §5.1, there are at least three distinct surface forms involving the predicate BEAT, but only one of them was explicitly tested with the time adverbial. That being said, it was also the case that none of the six consultants found a way to resolve the ungrammaticality of the item while still using the predicate BEAT. This is taken to indicate that the standard of comparison is most likely phrasal, but it does not prove the case.

5.3.2 Review of relevant WH-doubling results

Besides the time adverbial tests, the results of the WH-doubling test of the standard of comparison provide additional evidence about the status of the standard of comparison in the BEAT-construction. As we have saw in §5.3, the evidence suggests there is some kind of movement violation for at least some of the surface forms but standards of comparison, which could indicate that they are inside of a syntactic island, but could also indicate other types of movement violation. The variability seen in the responses furthermore indicate either some kind of structural ambiguity or other source of variation such as differing dialects.

Recall that the interpretation of the WH-doubling test relevant for assessing selectional restrictions on the standard of comparison laid out in §3.3.1 was as follows:

2) If doubling of the comparee succeeds, then if doubling of the standard of comparison succeeds, the standard is allowed to be phrasal whereas if it fails, then the standard of comparison has committed some kind of movement violation, possibly due to being within a dependent clause with a covert operator.

As we saw in §5.1.2, though the comparee could be doubled in all variations of the construction tested, the standard of comparison could not. The relevant data is repeated here in Table 5.10. What is clear is that in cases where the apparent com-

Table 5.10.: Results for WH-doubling of standard in ASL BEAT-construction, repeated from Table 5.2

Item	1	2	3	4	5	6
$\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT WHO}}^{\text{whq}}$	*	✓	?	∼	∼	*
$\overline{\text{WHO SNOW-WHITE BEAT BEAUTIFUL WHO}}^{\text{whq}}$	✓	*	*	*	✓	∼
$\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT BEAUTIFUL WHO}}^{\text{whq}}$	*	*	*	*	*	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

parative predicate is presented twice, the standard of comparison cannot undergo WH-doubling. However, as is shown in Table 5.10, there is some disagreement as to what happens when only one instance of the comparative predicate is present. If the comparative predicate behaves as an adjunct or at least a fully independent constituent, which is what the WH-doubling tests of the comparative predicate indicate, at least for cases involving BEAT-1, then it is not at all obvious how simply changing the position of the comparative predicate within the utterance would impact whether the standard of comparison incurs some kind of movement violation or not. It is particularly unclear how simply changing the position of the comparative predicate would result in a syntactic island under such circumstances.

However, if as discussed in §5.1.3 there are two distinct underlying structures, BEAT-1 and BEAT-2 and (at least some) cases that have a surface form that appears to be a case of BEAT-1 are actually cases of BEAT-2 with an elided adjective, (leaving open the possibility that other cases of BEAT-1 may be ambiguous with cases of BEAT-

2, but that BEAT-2 is never ambiguous with BEAT-1) the results make more sense. In fact, in combination with the observation presented in §5.2.3 that what appears to be a comparative predicate is at least sometimes instead receiving the interpretation of an attributive or predicative adjective, the presence of a movement violation in cases involving BEAT-2 make considerably more sense as it has been argued that predicative uses of the adjective in ASL involve an operator (MacLaughlin 1997), which we would expect to induce the observed island effect. (Even without the analysis in MacLaughlin 1997, it is likely that the predicative usage would result in a complex constituent that would incur movement violations if the standard were moved without the attached predicate moving with it.)

While this is a line of argumentation we will continue in the discussion section of this chapter, the importance at this point in time is that it suggests the standard of comparison in the BEAT-construction is more likely to be phrasal. Under this argument, (true) BEAT-1 is the construction that contains a comparative predicate, and in these cases the standard of comparison can freely undergo WH-doubling.

5.3.3 Wh-island tests

All the same, we would like to see whether the wh-island tests provide any further indication as to whether the standard of comparison is phrasal or clausal especially since WH-doubling of the standard of comparison does incur movement violations all of the time in cases involving BEAT-2 and some of the time in cases involving BEAT-1. As in the last chapter, however, we find that the prerequisite conditions for the wh-island test only appear to be met by one of the signers, meaning any conclusions about the presence or absence of a (covert) wh-operator in the BEAT-constructions that we may draw from the results at this point in time are merely tentative.

Recall that the interpretation associated with the wh-island test in §3.3 was as follows:

2) Provided question-embedding predicates induce wh-island effects:

a) If neither a (semi-)factive- nor question-embedding predicate can be placed in the standard of comparison, then the standard of comparison is most likely obligatorily phrasal.

b) On the other hand, if a semi-factive predicate but not a question-embedding predicate can be placed in the standard of comparison, then the standard of comparison is at least sometimes clausal with a covert operator.

As discussed previously in §4.3.3 while examining the wh-island test results for the MORE-construction, the first thing which needs to be ascertained for each individual signer is whether question-embedding predicates induce wh-island effects.

In order to have confidence that the wh-island tests work as intended, WH-questions targeting the subject of the relative clause that follows the question embedding predicate (WONDER) would need to be judged ungrammatical while the otherwise same subjects of the relative clause following a (semi-)factive predicate (THINK) would need to be judged grammatical. In fact, only one of the six consultants appeared to exhibit this kind of distinction, as can be seen from the results shown in Table 5.12. It is clear that question-embedding predicates did not induce wh-island effects for

Table 5.11.: Results for wh-island test verification, repeated from 4.14

Item	1	2	3	4	5	6
IX-1/IX-3MAX WONDER $\overline{\text{IX-3 SMART}}^{\text{cond}}$	Better if Q at end	✓	∼	✓	✓	✓
$\overline{\text{IX-1/IX-3MAX WONDER WHO SMART}}^{\text{whq}}$	*	✓	*	✓	✓	✓
$\overline{\text{IX-1/IX-3MAX WONDER SMART WHO}}^{\text{whq}}$		*	*	✓	✓	✓
$\overline{\text{IX-1/IX-3MAX THINK WHO SMART}}^{\text{whq}}$	Better if WHO at end	*	*	✓	✓	✓
$\overline{\text{IX-1/IX-3MAX THINK SMART WHO}}^{\text{whq}}$		*		∼	✓	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point

five of the consultants. They either accepted or rejected both types of utterances regardless of which predicate served as the matrix verb, as can be seen in Table 5.11 above. The first consultant found attempts to form a question targeting the sub-

ject of a dependent clause following the question-embedding predicate WONDER to be ungrammatical and found the same sort of question following the (semi-)factive predicate THINK to be at least marginally better if the question word were moved to the end of the utterance. However, it should be noted that this word order variation was not tested for the question-embedding predicate, so it is possible that the grammaticality judgment stemmed from this extraneous fact. That is to say, while question-embedding predicates may induce wh-island effects for this signer, there is room for reasonable doubt. That being said, this signer also appeared to exhibit wh-island effects in the MORE-construction, as noted in §4.3.3. Altogether, this means that the conditions required for the hypotheses associated with the wh-island tests were taken to be met for only one signer, meaning any conclusions we draw from the results of this test can only be tentative.

While we will focus only on the response of the first signer here since they most likely met the prerequisite conditions, the full results of the wh-island test items for the BEAT-construction are given in Table 5.12.[7] As can be seen, the first consultant did

Table 5.12.: Results for wh-island test in ASL BEAT-construction

Item	1	2	3	4	5	6
M-A-R-Y TALL BEAT IX-1 THINK TALL	✓[1]	*	*	*	*	*
M-A-R-Y TALL BEAT IX-1 WONDER TALL	✓[1]	*	*	*	*	*

✓=grammatical, ∼=marginal, *=ungrammatical, ?=unclear, & blank means missing data point
[1]with only first TALL

not exhibit any island effects when the question-embedding predicate (WONDER) was used in the standard of comparison. While the ability to use both THINK and WONDER within the standard of comparison indicates that the standard can be comprised of a clause, the lack of distinction between the two would suggest that the standard marker does not select for a clausal standard (that is a standard with a covert operator and a

[7]Items were most consistently presented with repeated words in the utterance produced twice. Some items were additionally presented with a repeated sign omitted, which sometimes impacted reported judgments.

bound degree variable) but a phrasal one and that apparent clausal standards actually involve some kind of type-shifting.

Another important point to note is that while the first consultant accepted both items, they did so only if the second instance of TALL was dropped. However, though the remaining five consultants judged both items as ungrammatical, they were presented with items where both instances of TALL were produced. Therefore, it is currently unclear the extent to which grammaticality is contingent on the number of times the comparative predicate appears and where it is located. This is to say that it is still possible the clauses IX-1 THINK and IX-1 WONDER may be able to serve as complex standards of comparison even if they receive an individual rather than degree type. The data does not allow us to say either way on that particular point.

Returning though to the judgments of the first signer, all of this leaves us without a clear cut answer to our original question about possible selectional restrictions imposed by the standard marker BEAT. The results suggest a phrasal standard more so than a clausal one, but are not conclusive.

5.4 Syntactic and semantic analysis of the ASL BEAT-construction

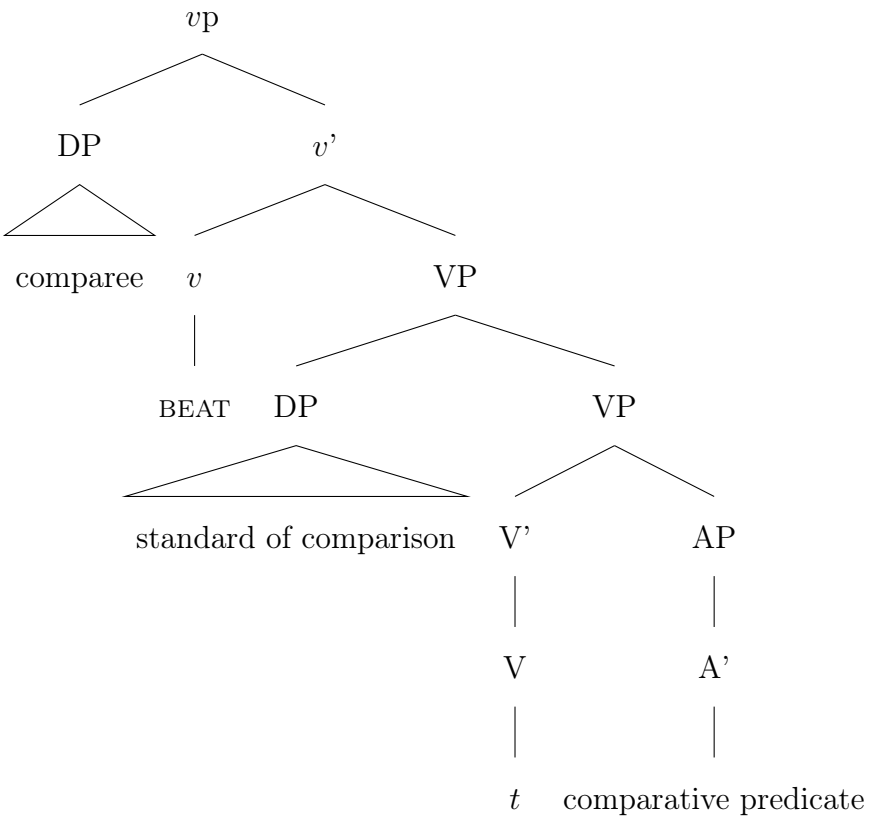
Now that we have reviewed the results from each set of tests for each research question, it is time to examine how these results comport with the analyses proposed at the beginning of this chapter. As we shall see, the results were largely consistent with those syntactic and semantic analyses but there is at least one other syntactic structure which may be creating ambiguity in some cases. This may help explain some of the patterns observed.

5.4.1 Towards a syntactic analysis of the BEAT-construction

As discussed at the end of chapter 2, the syntactic analysis for the BEAT-construction is that it behaves as a transitive verb which takes the comparee as its subject, and the standard of comparison as its object, as was argued for in Wilbur et al. (2018). The

analysis proposed here goes further and hypothesizes that the comparative predicate attaches somewhere along the way to either the vP or VP, roughly as shown in (5.9).

(5.9) Proposed syntax for ASL BEAT-construction



Note that under this analysis it is still possible for the comparee and/or the standard of comparison to be full clauses if they are nominalized or relativized in some manner (that is if they undergo some kind of type-shifting in the semantics), but that we do not expect to find any evidence that the standard marker *requires* that the standard of comparison be a clause and/or that it contains a covert operator.

To evaluate this proposed syntactic analysis, we will focus on the results from the WH-doubling tests, time adverbial tests, and wh-island tests, with data concerning the relationship of the BEAT-construction to the positive form also coming into play. The results from all of these tests are generally consistent with the structure in (5.9) but require some further consideration in order to account for all the data currently available.

The first key part of this syntactic analysis that we will evaluate is how the comparative predicate in the BEAT-construction attaches to the verb. As we have seen, it behaves more like an adjunct rather than a complement to the standard marker. As discussed briefly in 2, there was already evidence from Wilbur et al. (2018) that the comparative predicate did not need to be overtly specified if it could be sufficiently recovered from context (5.10).

(5.10) Optionality of overt comparative predicate in ASL BEAT-construction

$_i$GIRL $_{(i)}$BEAT$_j$ $_j$[POSS$_i$ MOTHER]

The girl has got her mother beat.

Context 1: she has better grades in college

Context 2: she has a better apartment

Context 3: she applies CPR better

Context 4: she is (considered) smarter

Context n:... (Wilbur et al. 2018)

Note that this study also saw similar types of examples in response to the picture description task (5.8, repeated as 5.11).

(5.11) Response from second consultant for picture description task with BEAT

dominant hand	E-M	BEAT$_j$	#ALL$_j$
non-dominant hand	$_j$5-LIST	→	→

The option for the comparative predicate to be omitted already suggested an adjunct over a complement analysis with respect to the syntax.

In this study, the results from the WH-doubling tests concerning the comparative predicate can be seen as further supporting this analysis. If the comparative predicate is an adjunct, we would expect the comparative predicate to behave like a fully independent constituent and be subject to WH-doubling. And indeed, the comparative predicate is able to undergo WH-doubling in the BEAT-construction (5.12).

(5.12) WH-doubling of comparative predicate in ASL BEAT-construction

$\overline{\text{HOW SNOW-WHITE BEAT QUEEN HOW}}^{\text{whq}}$

While on its own, this result would not be conclusive, especially as complements not contained in a syntactic island should also be able to undergo WH-doubling, this result in combination with the previously made observation that the comparative predicate is optional in cases involving BEAT weigh in favor of an adjunct analysis. Admittedly, other possibilities, such as a complement frequently subject to elision, do exist, but treating the comparative predicate as an adjunct allows us to maintain a more intuitive syntax for the verb BEAT that is capable of reflecting both its basic transitive verb meaning as well as its comparative one.

The second key part of the analysis under consideration is the treatment of the comparee and standard of comparison as the subject and object, respectively, of BEAT, as previously argued for in Wilbur et al. (2018), and the additional argument made here that the standard of comparison should not involve the presence of an operator in any case.

Given that we see consistent use of spatial agreement with the BEAT predicate when it is being used to set up comparison (5.13), it is reasonable to posit that the comparee and the standard of comparison behave as the subject and object, respectively, of the predicate.

(5.13) Example of spatial agreement in ASL BEAT-construction

DOCTOR SAY MOST WOMEN IX_{i-arc} POSS1 AGE, POSS1 HEARTRATE FINISH

(1)BEAT_{i-arc}

'The doctor says my heartrate is better than most women my age.'

(Wilbur et al. 2018: 64)

In (5.13), BEAT shows spatial agreement with the comparee (POSS1 HEARTRATE) and the standard of comparison (MOST WOMEN IX_{i-arc} POSS1 AGE) in the same way that verbs in ASL more generally show spatial agreement with their syntactic subjects and objects. In fact, this is a large part of the evidence used in Wilbur et al. (2018) to successfully argue that the BEAT-construction is an *exceed*-strategy comparative. That is, it is a comparative that uses a transitive verb to introduce the comparee and the standard of comparison. However, just because the standard marker is a verb

and the comparee and the standard of comparison serve as the syntactic subject and object of that verb, it does not automatically follow that the standard of comparison lacks a covert operator. For that part of the analysis, we need additional evidence.

The evidence indicating that the default analysis for the BEAT-construction should not involve operators comes not only from the assumption of how semantic extension would most likely play out with respect to grammaticalization, but also from taking into account all of the data concerning the WH-doubling tests, the wh-island tests, the time adverbial tests, and the tests for relationship to the positive form. As we shall see, however, accounting for all the currently available information may require positing some syntactic ambiguity that results in competing underlying structures.

Given the syntactic analysis under consideration, we would expect that both the comparee and the standard of comparison should be able to independently undergo WH-doubling. And for the comparee, this is precisely what we find, as we saw in §5.1.1. The comparee can undergo WH-doubling regardless of what the surface structure involving BEAT as a predicate looks like (5.14).

(5.14) Examples of comparee WH-doubling in ASL BEAT-construction

a) $\overline{\text{WHO BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$

b) $\overline{\text{WHO BEAUTIFUL BEAT QUEEN WHO}}^{\text{whq}}$

c) $\overline{\text{WHO BEAUTIFUL BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$

Intended: 'Who *is prettier than the queen?'*

This result is as expected given the analysis currently being entertained.

However, the story becomes more complicated when we consider the results from testing whether the standard of comparison can undergo WH-doubling. As we saw in §5.1.2, the standard of comparison can undergo WH-doubling, but not in every case we would expect it to be able to given the analysis under consideration. The proposed analysis would lead us to believe that the standard of comparison should be able to undergo WH-doubling in every case where the comparee can undergo WH-doubling

unless some other kind of movement violation is incurred, such as the presence of a complementizer that blocks movement.

What we find instead, is several cases where movement of the standard of comparison is ungrammatical (5.15).

(5.15) Examples of standard of comparison WH-doubling in ASL BEAT-construction

a) ✓/* $\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT WHO}}^{\text{whq}}$

b) ✓/* $\overline{\text{WHO SNOW-WHITE BEAT BEAUTIFUL WHO}}^{\text{whq}}$

c) * $\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT BEAUTIFUL WHO}}^{\text{whq}}$

Intended: 'Who *is Snow-White prettier than?'*

Consultants agreed that WH-doubling of the standard of comparison is not permissible in cases where the comparative predicate is pronounced twice but disagreed about the grammaticality of individual items when the comparative predicate is only pronounced once. The ungrammaticality of doubling the standard of comparison in several cases suggests some kind of movement violation that needs to be accounted for.

One solution would be to assume that this reflects the ability of the standard marker to select more than one type of standard of comparison and that contrary to the original hypothesis, at least some cases contain a covert operator. However, the tentative results from our other tests do not fully work within a clausal standard with a covert wh-operator analysis either.

The first problem comes from the time adverbial test (5.16). If the standard of comparison were capable of being a full clause, we would expect that it would be able to be modified by its own time adverbial as it should contain within it a tense phrase. However, as we saw in (5.16), this is not what we find.

(5.16) Adverbial test for ASL BEAT-construction

* M-A-R-Y BEAT TALL 5-YEAR-PAST

Intended: *'Mary is taller (now) than she was five years ago.'*

It is possible that the test item used is ungrammatical for some reason not concerning the time adverbial. For instance, it is possible that the placement of the comparative predicate or other issues pertaining to word order is what renders the utterance ungrammatical rather than the time adverbial. However, as none of the consultants seemed to find a way to repair the item, and all seemed to find it ungrammatical, it seems most likely that the standard of comparison for the BEAT-construction does not involve clauses after all or does so in a manner markedly different from that of English canonical comparatives.

Tentative results from the wh-island test also point away from the presence of a covert operator. Though not all of the consultants differentiated between a question-embedding predicate and a (semi-)factive embedding predicate, one consultant did. And for that consultant, no wh-island effects were to be had in the BEAT-construction (5.17).

(5.17) Lack of wh-island effects in BEAT-construction for one consultant

a) M-A-R-Y TALL BEAT IX-1 THINK

b) M-A-R-Y TALL BEAT IX-1 WONDER

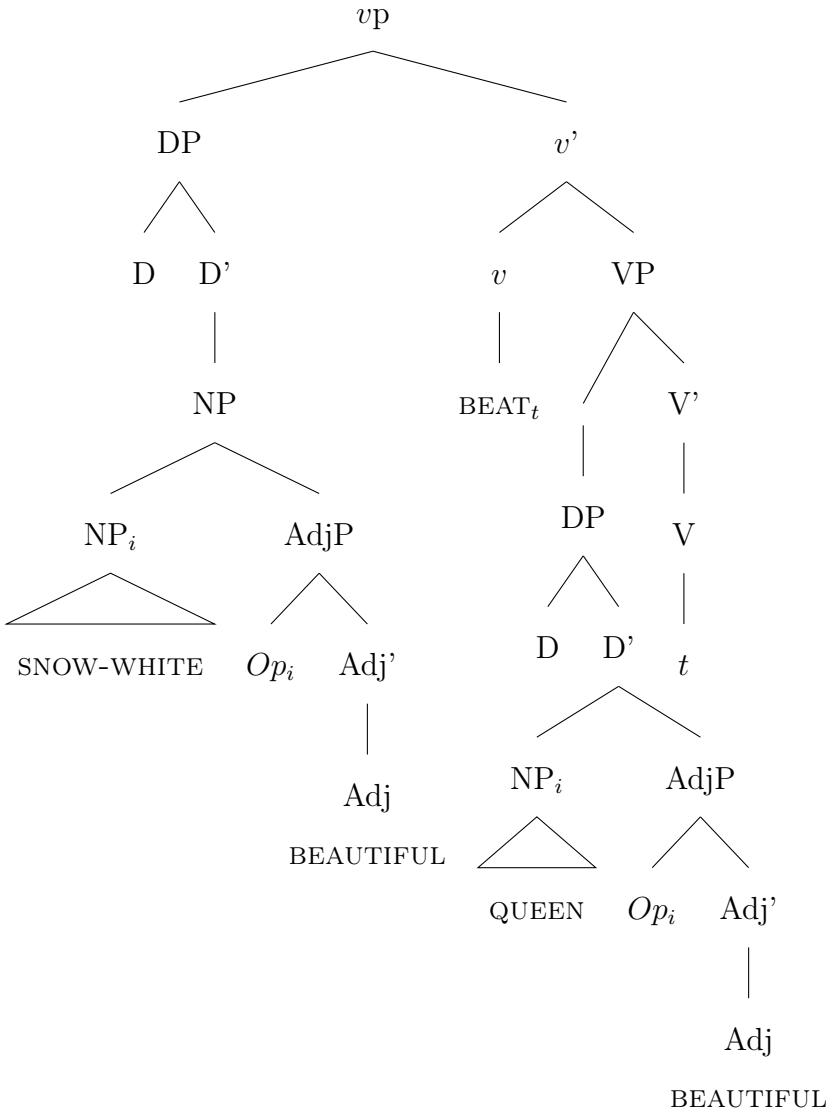
No contrast is seen regardless of whether a (semi-)factive or question-embedding predicate is placed in the standard of comparison, unlike the contrast we saw for the MORE-construction.

We therefore are left to conclude that the source of the movement violation that results in ungrammatical WH-doubling of the standard of comparison in the BEAT-construction arises from a movement constraint not related to binding degree variables.

A review of the literature on adjectives in ASL brings forward one possible solution. MacLaughlin (1997) proposes that predicative uses of adjectives in ASL involve an operator. If we assume MacLaughlin's (1997) analysis, and further assume that what appears to be the comparative predicate is instead sometimes a predicative ad-

jective associated with either the comparee or the standard of comparison, then we arrive at the following possible underlying structure (5.18).

(5.18) Syntactic analysis with predicative adjectives rather than comparative predicate in BEAT-construction



It should be noted that MacLaughlin's (1997) analysis is based on observation and analysis of a single signer, and to the best of my knowledge, there has been little follow-up reporting in the way of how those findings play out across a wider range of consultants.

If the structure in (5.18) or at least something very much like it, is a viable structure, then we get the right predictions for a number of the cases we have examined with respect to WH-doubling of the standard of comparison. With this structure, doubling should be ungrammatical because the presence of an operator creates a syntactic island that the standard of comparison cannot escape from. Or alternatively, the movement violation results from an attempt to extract the head rather than the full phrase. If the latter is the source of the movement violation, it further explains why doubling of the comparee is nevertheless grammatical in all cases. Movement of only the comparee and movement of the comparee with the associated predicative adjective would be indistinguishable from the word order of the surface string. In these respects, this structure fairs better than the one proposed at the beginning of the chapter.

However, we do not want to simply adopt this new syntactic structure and abandon our previous one, either. For though the predicative adjective analysis in (5.18) seems to yield the right predictions in a number of cases, it makes exactly the wrong predictions concerning WH-doubling of the comparative predicate. It should not be subject to WH-doubling under this analysis, but at least in cases involving the presence of only one comparative predicate, that comparative predicate is able to undergo WH-doubling. It also makes the wrong predictions with respect to the picture description task. Under the structure in (5.18), we would expect the positive form to always be entailed because rather than a comparative predicate that is associated with the standard marker, we have a predicative adjective that is always making a positive form assertion about the entity it modifies. The predicative adjective analysis of the BEAT-construction accounts for more of the data, but not all of it.

What we can appeal to, though, is syntactic ambiguity. It may be possible that the predicative adjective analysis (5.18) and the adjunct comparative predicate analysis (5.9) are both viable structures. In fact, if we assume such ambiguity and further assume that there is some variation as to whether the comparative predicate is left or

right adjoined to the standard marker, we can now account for all the data concerning WH-doubling and norm-relatedness.

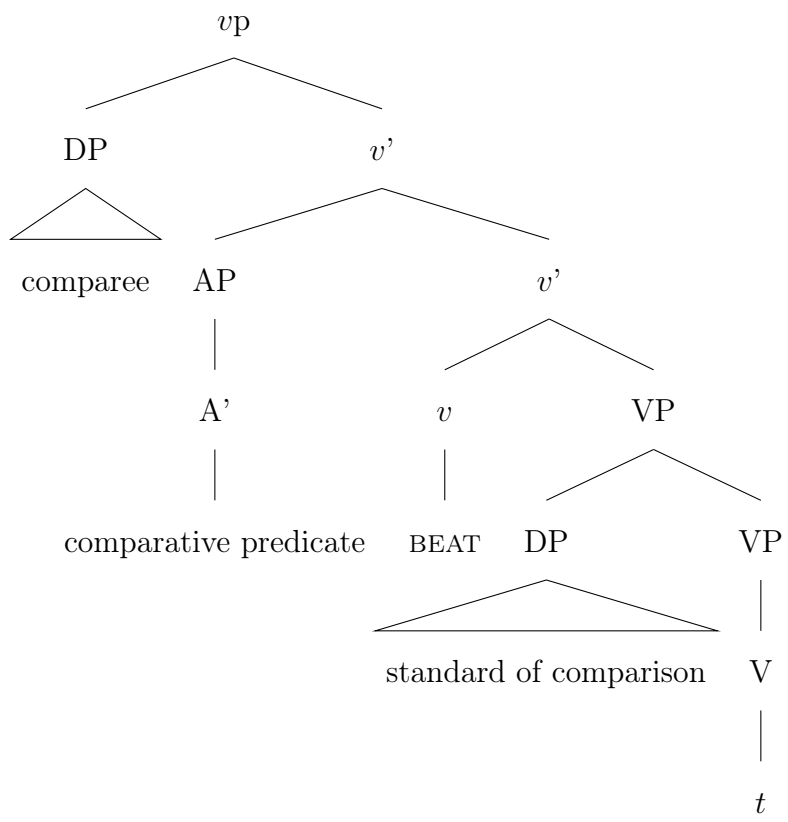
Under this analysis, we now have two cases involving BEAT. What we earlier called BEAT-1 and BEAT-2, let us now call BEAT-comp and BEAT-pred, respectively. Note that while we are labeling BEAT for the sake of exposition, we are still assuming that the syntactic and semantic analysis of the verb BEAT is the same in both cases. Really, the difference is in the attachment site(s) of the gradable property.

BEAT-1 involves a gradable property that serves as a comparative predicate and attaches to the verb as an adjunct. Whether the comparative predicate will show up after the comparee or after the standard of comparison depends on whether it is left- or right-adjoined to BEAT (5.19). Note that this actually indicates a higher attachment site than shown previously in (5.9).

BEAT-pred involves at least one gradable property that attaches to either the comparee or the standard of comparison, but cases with two gradable properties are always clearly a case of BEAT-pred, as previously depicted in (5.18). How likely a given utterance using BEAT and containing only one gradable property is to be taken as a case of BEAT-pred depends highly on whether the signer prefers the left- or right-adjoined structure for BEAT-comp.

(5.19) Revised syntax for ASL BEAT-construction, left-adjoined comparative

predicate



The reason for such strong agreement as to the ungrammaticality of extracting the standard of comparison when there were two occurrences of the comparative predicate (5.15 c) is because that case removes the possibility of an adjunct comparative predicate analysis. However, cases with only one overtly stated comparative predicate can be analyzed either as an adjunct comparative predicate or as a predicative application of the gradable property to the comparee. Which would be the more likely interpretation would depend on whether the signer preferred left- or right-adjunction of the comparative predicate. This would explain not only the mixed judgments concerning WH-doubling of the standard of comparison when only one comparative predicate was present (5.15 a & b), but also why each consultant rejected one or the other of the two forms, but no consultant rejected both forms.

All of this would also explain why Wilbur et al. (2018) as well as the early piloting for this study experienced such mixed responses with respect to whether the use of

the BEAT-construction entailed the positive form or not. The predicative adjective structure would entail the positive while the adjunct comparative predicate structure would not. The possibility of ambiguity between the two structures in some cases (namely those involving the presence of only one adjective) would result in exactly the kind of confused responses to questions trying to resolve the issue that have been observed. It also explains the comment from one consultant during the picture description task that seemed to indicate a predicative or attributive application of the gradable property to the standard of comparison.

Taken collectively, the results lead to an acceptance of a revised version of the BEAT-construction proposed in chapter 2 existing alongside an ambiguous structure that involves gradable predicates modifying either the subject or object of the verb BEAT.[8]

5.4.2 Towards a semantic analysis of the BEAT-construction

Now that we have examined how the data comports with the proposed syntactic analysis for the BEAT-construction, let us move on to examining how the evidence aligns with the proposed semantic analysis, namely that given in (2.20), repeated here as (5.20).

(5.20) Assumed semantics of Japanese MORE (YORI), PROPOSED FOR ASL BEAT

$$[\![\text{MORE}_I]\!] = \lambda y \lambda g \lambda x. max\{d' \mid g(d')(x) = 1\} \succ max\{d'' \mid g(d'')(y) = 1\}$$

(Kennedy 2007)

Under this analysis, the standard marker BEAT takes three arguments, two individuals and one gradable property, and compares the degrees for those individuals with respect to the gradable property in question. For ASL BEAT, the proposed analysis also assumes that the gradable property can be specified covertly provided it is recoverable

[8]Note, there are actually three possible structures at play, but it is easier for the sake of exposition to maintain only two. However, cases of BEAT-pred that have the same surface form as BEAT-1 could actually only involve one underlying adjective with the ambiguity being whether it attaches to the verb or the noun rather than whether there is an elided underlying adjective.

from discourse, and that the optional overt specification of this argument works in much the same way as the optional specification of dimensions for multidimensional gradable properties. This (c/overt) comparative predicate is syntactically an adjunct to the verb, as we saw in the previous section. (See Sassoon 2010 for discussion.) As we saw from the results concerning differential phrases, degree comparisons, norm-relatedness, and subcomparatives, it is clear that the BEAT-construction contains degrees, though as we saw in the previous section, it is unlikely that the standard marker is able to select clausal standards containing a covert wh-operator.

Differential phrases predicate the difference of extents, that is degrees, between two individuals (Schwarzchild & Wilkinson 2002, Schwarzschild 2005). Without access to a degree, these phrases cannot be computed. This fact has contributed to some proposals that lexical categories besides adjectives should also have some kind of degree available in order to accommodate their compatibility with *by*-measure phrases (Morzycki 2007). As we saw in §5.2.1, this study was able to confirm the report in Wilbur et al. (2018) that the BEAT-construction licenses differential phrases, and importantly, may do so without additional support (5.4, repeated as 5.21).

(5.21) Example differential phrase with ASL BEAT-constuction

KARL HEAVY BRUNO HEAVY BEAT 20 LB WOW

'Bruno's weight beats Karl's weight by 20 lbs./Karl is heavy. Bruno is (really heavy). Bruno beats Karl by 20 lbs.

This means BEAT needs a semantic analysis that makes degrees accessible to the differential phrase, which is consistent with the hypothesis that BEAT is a comparison of individuals.

Not only does the BEAT-construction allow differential phrases, but it also allows degree comparisons. Unlike Wilbur et al. (2018), this study found that whether or not supporting morphology was necessary to license the degree comparison varied from signer to signer and while there seemed to be general consensus that degree comparisons were possible with BEAT, there was less agreement as to exactly what formulation was most acceptable. The fact that some signers seem to prefer that

FINISH be present to form a degree comparison may be indicative of a type-shifting strategy to make the degree phrase compatible with a standard marker that takes individuals, but we cannot be certain of this at this point in time. What we do know is that the ability of the BEAT-construction to form degree comparatives indicates degrees are compatible with the semantics of the standard marker.

Furthermore, results from the norm-relatedness tests indicate that the standard of comparison in the construction directly supplies a degree rather than simply manipulating the contextual variable. The tests allowed us to further verify initial reports from Wilbur et al. (2018) that the BEAT-construction does not induce norm-relatedness readings. This was particularly important to verify given that the examples provided actually ran counter to what we would predict if the construction was an explicit comparison, a claim that other metrics used in Wilbur et al. (2018) otherwise convincingly showed. However, the picture description task did not reveal any restrictions on who could serve as a comparee or standard of comparison based on either norm-relatedness or anti-norm-relatedness readings. While the conclusions that can be made from that particular set of results is less robust, they are nevertheless consistent with the semantic analysis proposed here.

The one piece of evidence that might give us pause concerning the current semantic analysis for the BEAT-construction is the apparent ability of the BEAT-construction to form subcomparatives. As previously discussed, the subcomparative requires two degrees, which is still consistent with the current analysis. However, as also discussed in §2.2.2 and 3.2.4, because the degrees are associated with distinct gradable properties, it is often assumed that this means the comparisons are degree-type comparisons, that is that they involve clausal standards with covert operators that bind a degree variable. Otherwise it is unclear how two gradable properties enter the computation for evaluation.

This seems to leave us with two options. Either we reconsider the semantic (and syntactic) analysis for the BEAT-construction or we reconsider the licensing conditions for subcomparatives. Given that up to this point, the results have been indicative

rather than conclusive with respect to BEAT selecting for phrasal rather than clausal standards, that is of being a comparison of individuals rather than degrees, there is an argument to be made for reconsidering the semantics of ASL BEAT rather than reconsidering the licensing requirements for subcomparatives more generally. Nonetheless, I think there is a way to explain why BEAT seems compatible with subcomparatives while also maintaining the analysis that ASL BEAT is an individual-type comparative. It is this path we will pursue here while acknowledging that further research may require reconsideration of this approach.

There are three key observations that I think allow us to account for how BEAT could be a comparison of individuals and still allow for what appear to be subcomparatives. The first observation concerns the nature of subcomparatives. Subcomparatives require commensurate gradable properties. (See, for example, Kennedy 1997.) That is they require access to predicates that share a dimension of measurement. *Tall* and *wide* or *deep* work because they all rely on a dimension of linear extent but differ with respect to the orientation of that linear extent, whether it is horizontal or vertical or whether the measurement extends above or into the ground. The second two observations concern the data for the BEAT-construction itself. Firstly, reports that the formation of an apparent subcomparative with BEAT improve when the agreement marking on the verb is co-indexed with the *extent* of the gradable property rather than with the entity being described by this property hint that the dimension or the degree has somehow been nominalized. Secondly, the evidence presented so far suggests that the gradable property providing the dimension of comparison behaves like an adjunct rather than a complement in the BEAT-construction. Furthermore, the dimension/gradable property of comparison can be supplied *covertly* rather than needing to be overtly specified. With these propositions in hand, I think we can build an analysis that plausibly explains the apparent compatibility of the BEAT-construction with subcomparatives without requiring us to abandon the analysis that BEAT involves a comparison of individuals just yet.

Under this analysis, the apparent gradable properties in the construction (WIDE and TALL) are nominalized dimensions or degrees and the dimension used for the computation of the construction as a whole is covertly specified as the commensurable aspect between the two. In the case of *width* and *height*, this dimension would be something like linear measurement.

Whether this analysis can withstand additional testing is unclear and there are some obvious questions that immediately arise. For instance, how is a nominalized reading of the property achieved and what with respect to production distinguishes it from a predicative or attributive reading. That there is some restriction on which lexeme can be used in place of *tall* for at least some signers in at least some cases may hint at the answer, but does not yet provide anything definite. And unlike English where there are well established tests for determining lexical category, the currently available tests in ASL for distinguishing verbs from adjectives and adjectives from nouns are limited.[9] However, the proposal does show that the analysis of the BEAT-construction as a comparison of individuals is still viable given the data currently available.

5.4.3 Evidence for speaker or situational expectations in the semantics of BEAT from restrictions on the comparative predicate

Another observation about the BEAT-construction from this study is that BEAT, even in its comparative usage, does still seem to carry some idea of speaker or situational expectations. This came through with the judgments concerning the use of OLD as a comparative predicate with the construction. More than one signer commented that trying to use OLD as the comparative predicate with BEAT degree comparisons felt strange. One was able to accept the construction if the context was heavily modified so as to make it clear that the person under discussion had lived

[9]There are however, some well established relationships between some noun-verb pairs, such as SIT and CHAIR, that involve a particular type of reduplication to form the noun (Supalla & Newport 1978).

past their expected age. This suggests that the BEAT-construction may carry additional implications concerning speaker or situational expectations, but more work would need to be done to disentangle exactly what the nature and source of those expectations are and how they interact with the interpretation of the construction.

5.4.4 Issues with word order constraints

Before concluding this chapter, there is one more point regarding the BEAT-construction that should be discussed. As noted in a couple of places above, particularly when detailing the results of the degree differential tests, there were several times where word order appeared to play a role in judgments. BEAT appears to induce a strong preference for what appears to be SOV or perhaps more frequently, OSV word order in at least some signers. It's unclear whether this preference is driven by the agreement marking of BEAT or some other factor. These word orders were not tested for clausal boundaries, but such testing should be done in future, though indexical-point copies might be a better test in those cases. (See Loos 2016, 2017 for more on tests for clausal boundaries in ASL.) Furthermore, this word order was not used in any of the test items provided. It may turn out to be the case that many items were rejected due to these issues with word order and would improve with test items containing SOV or OSV word order.

5.5 Evidence sufficient to adopt analysis as working hypothesis

Taken altogether, the evidence is consistent with the proposed analysis. We see from degree differentials, degree comparisons, norm-relatedness, and subcomparative tests all point to the presence of degrees in the BEAT-construction. Further evidence from WH-doubling, time adverbials, and wh-islands so far indicate that the standard marker is likely to select for individuals and that the comparative predicate behaves like an adjunct rather than a complement. Though there is still additional research to be done, particularly with respect to how to account for cases of apparent sub-

comparatives in the BEAT-construction, the evidence so far is in favor of adopting the analysis proposed here as a set of working hypotheses going forward, particularly since, as discussed in chapter 2, this analysis seems like a natural extension of less comparative uses of BEAT.

6. MORE, BEAT AND COMPARING COMPARISONS

Having examined the results of this study as they pertain to the MORE- and BEAT-constructions individually, let's turn our attention to what the results of this study indicate when we consider them in tandem. We will first discuss the behaviors of each construction concerning *intensive aspect* and Y-OO and how this informs our understanding of degrees and gradable properties in ASL. We will then explore what implications the respective analyses given here for the MORE- and BEAT-constructions might have for our understanding of lexical categories before concluding with a discussion of the typological implications of this study.

6.1 Behavior of *intensive aspect* and Y-OO with MORE and BEAT

We begin our in tandem examination of the results for the MORE- and BEAT-constructions by examining the distributional patterns of *intensive aspect* and Y-OO. Overall, we find that although both morphemes sometimes appear as translations for the English *very*, neither actually show the distributional patterns we would expect with the semantics of *very* given the analyses for MORE and BEAT that have been argued for here.

To start with, the *intensive aspect* seems to be allowed to freely combine with the comparative predicate of the MORE-construction and was furthermore accepted by a third of signers in the BEAT-construction (6.1), a result we would not expect if the *intensive aspect* shared the semantics of English *very* and the semantics proposed for each construction here is accepted.

(6.1) Example of *intensive aspect* in ASL MORE- and BEAT- constructions

a) EVA MORE SMART$_{intensive}$ THAN BOB

b) ✓/* EVA BEAT BOB SMART$_{intensive}$

As discussed in §3.2.5, the semantics of *very* is assumed to work by increasing the degree of the contextual standard (Kennedy & McNally 2005). However, granting the premise that the ASL MORE-construction does have a semantics and syntax on par with that of an English canonical comparison of superiority, such a contextual standard is not available and it would be quite odd to raise the explicitly provided standard of comparison. Our prediction, then, would be that if *intensive aspect* had the same semantics as English *very*, then it should not be able to modify the comparative predicate in the ASL MORE-construction. However, this is not what we find, which tells us we need a semantics for *intensive aspect* that differs from that of English *very*.[1]

Y-OO, likewise, did not behave as would be expected if it had a denotation like English *very*. For consultants who accept the MORE-construction to begin with, it seems generally grammatical to place Y-OO before the comparative morpheme MORE, uniformly ungrammatical to place it before THAN, and mostly ungrammatical to place it before the comparative predicate (6.2).

(6.2) Examples of MORE-construction with Y-OO

a) ✓/∼ EVA Y-OO MORE SMART THAN BOB

b) * EVA MORE SMART Y-OO THAN BOB

c) * EVA MORE Y-OO SMART THAN BOB

Compare this with the distributional patterns of *very* and *really* with the English canonical comparative of superiority (6.3).

(6.3) Differences in behavior of English *very* and *really*, repeated from (3.37)

[1]Another common translation practice provides an interesting line of future research on ASL *intensive aspect* that might be worth pursuing. In particular, the contrast between SMART and SMART$_{intensive}$ is sometimes translated as the difference between English *smart* and *brilliant*. I have also seen an example of what appears to be CUTE$_{intensive}$ translated from ASL into English as *the cutest*. This may indicate that *intensive aspect* somehow takes adjectives and returns extreme adjectives. (See Morzycki 2012 and therein for more on extreme adjectives.)

a) *John's very more handsome.

b) John's really more handsome.

c) *John's more very handsome.

d) *John's more really handsome.

Given for the moment that the MORE-construction has the same syntax and semantics as the English canonical comparative of superiority, Y-OO clearly patterns more closely with English *really* than with *very*. Judgments about where Y-OO could occur within the BEAT construction were more mixed (6.4), but some of this could reflect the previously described issues concerning variation in word order preferences with BEAT rather than actual restrictions on the distributional patterns of Y-OO.

(6.4) Examples of BEAT-construction with Y-OO

a) ✓/* EVA Y-OO BEAT BOB SMART

b) */✓EVA BEAT BOB Y-OO SMART

In particular, results for whether EVA Y-OO BEAT BOB SMART patterned with the results from WHO SNOW-WHITE BEAT BEAUTIFUL WHO, indicating that Y-OO may actually be grammatical as a modifier to the standard marker BEAT in cases where the comparative predicate is in the signer's preferred location. It is less clear, then, whether the ability of Y-OO to modify the standard marker BEAT (or possibly, the entire verb phrase) but not the standard marker THAN (again, or possibly, the entire THAN-phrase) is due to a difference in lexical category distinctions or due to some other restriction. In both the MORE- and BEAT- constructions, Y-OO was mostly judged ungrammatical when it occurred before the comparative predicate, though, again, issues of word order preferences with the BEAT-construction impede how strong of a conclusion we can reach. All the same, the distribution seen so far for Y-OO seems to resemble that of English *really*, though further tests concerning both its syntax and semantics are needed.

As can be seen, there is still much work to be done in the way of analyzing modifiers of gradable properties in ASL. What the results of this study do show us for both *intensive aspect* and Y-OO is the difficulty of relying on translation for developing semantic tests. This is a danger that Bochnak & Bogal-Allbritten (2015) have cautioned against using Navajo as an example. They convincingly show that though *yee'* is frequently given as a translation for English *very*, it actually has quite a different distributional pattern, displaying sensitivity to the polarity of the gradable property it modifies (6.5).

(6.5) Navajo example of gradable property modifier sensitive to polarity

a. *shideezhí* *'áłts'óózí* *yee'*
my.little.sister 3-slender YEE'
'My little sister is very slender.

b. *díí* *dibé* *yázhí* *'áłtsísí* *yee'*
this sheep small 3-little,small YEE'
'This lamb is very small.'

c. # *shideezhí* *nineez* *yee'*
my.little.sister 3-tall YEE'
(Intended: 'My little sister is very tall.')

(Bochnak & Bogal-Allbritten 2015)

According to their report, *yee'* is compatible with negative gradable properties, such as *small*, but is incompatible with positive gradable properties, such as *tall*.[2] If one does not check for the language internal distribution patterns of such modifiers, one is very likely to make erroneous assumptions that result in semantic tests that do not actually target the intended set of features under investigation. That is, one is likely to end up working with unreliable tests, as Bochnak & Bogal-Allbritten (2015) also point out. The results of this study further drive home this point. These

[2]Positive and negative here refer to the direction the degrees are ordered along their respective scales and the consequences of that ordering for the grammar, not to speaker attitudes or evaluations of the properties in question. On this usage, *short* is understood to be essentially the negative counterpart to *tall*. The use of the terms positive and negative to describe gradable properties in this manner goes back to at least Seuren (1978).

results are also important because, alongside the use of comparatives, English *very* is a particularly prominent test for gradability in English. Distributional patterns of modifiers for gradable properties have also led to the proposal of several sub-classes of gradable properties. (See, among many, Kennedy & McNally 2005, Morzycki 2012.) It is possible that ASL will demonstrate sensitivity to a distinction between gradable properties that other, more extensively researched languages do not observe and these results provide initial distributional data necessary for that line of inquiry.

6.2 MORE, BEAT and lexical categories

Besides the implications for our ability to identify and further probe distinctions between gradable properties in ASL, the results from this study also have interesting implications for our understanding of the relationship between degrees and lexical categories. Throughout, the results have indicated that there are clear differences between the MORE- and BEAT-constructions that must be accounted for regardless of what analysis is finally adopted. Here, I have argued that the MORE-construction involves a comparison of degrees while the BEAT-construction involves a comparison of individuals and that furthermore, the comparative predicate exhibits complement-like behavior with the MORE-construction and adjunct-like behavior with the BEAT-construction. Assuming these analyses are on the right track, they raise interesting questions about what relationship degrees should be understood to have with various lexical categories.

6.2.1 Clear distinctions in semantic and syntactic composition

Both the MORE- and the BEAT-construction showed strong evidence that they contain degrees in their composition. Both were able to take degree differentials and to form degree comparisons and the behavior of both with respect to (anti-)norm-relatedness indicates that their standards of comparison introduce degrees into the computation somehow. In other words, they both behave in a manner that indicates the presence

of degrees in the language (Beck et al. 2009) as well as in each construction, that is like explicit comparatives (Kennedy 2007).

However, the two constructions differed in key ways related to time adverbials, wh-island effects (at least for the consultant who exhibited them), and WH-doubling. In other words, there is evidence that they have different syntactic and semantic representations.

While less robust, time adverbial tests indicate it is more likely that BEAT does not take standards containing clauses, and wh-island tests further indicate that the MORE-construction can take clausal standards that contain a covert wh-operator in the standard of comparison (6.6) while the BEAT-construction does not (6.7).

(6.6) Wh-island effects for one signer in ASL MORE-constr., repeated from (4.15)

a) M-A-R-Y MORE TALL THAN IX-1 THINK/∼WONDER
Mary's taller than I thought/wondered.

b) M-A-R-Y MORE PRETTY THAN IX-1 THINK/*WONDER
*Mary is prettier than I thought/*wondered.*

(6.7) Lack of wh-island effects for one signer in BEAT-constr., repeated from (5.17)

a) M-A-R-Y TALL BEAT IX-1 THINK

b) M-A-R-Y TALL BEAT IX-1 WONDER

This is expected given that, as discussed in §2.2.2 and 3.3.1, degree-type comparison allows clausal standards of comparison with a covert operator binding a degree variable while we expect that the individual-type comparison involves phrasal standards or clausal standards that have been type-shifted in some fashion and have no such covert operator. This means we anticipate island effects for the MORE-construction but expect no such island effects for the BEAT-construction, as was found to be the case.

However, of more interest, evidence from WH-doubling provided a clear indication that the comparative predicate of the MORE-construction does not behave in the same

manner as the comparative predicate of the BEAT-construction. The comparative predicate in the MORE-construction encounters some kind of movement violation that blocks WH-doubling (6.8) whereas the comparative predicate of the BEAT-construction is free to undergo such doubling (6.9).

(6.8) WH-doubling of comp. pred. in ASL MORE-constr., repeated from (4.9)
*$\overline{\text{HOW SNOW-WHITE MORE BEAUTIFUL THAN QUEEN HOW}}^{\text{wh}}$

(6.9) WH-doubling of comp. pred. in ASL BEAT-constr., repeated from (5.12)
$\overline{\text{HOW SNOW-WHITE BEAT QUEEN HOW}}^{\text{whq}}$

The analysis provided here to account for that difference is that the comparative predicate of the MORE-construction is contained in a complex structure and behaves more like a complement while the comparative predicate in the BEAT-construction is a fully independent phrase that behaves more like an adjunct. It could be that MORE belongs to a more closed class of functional lexemes and BEAT belongs to a more open class of lexical items, that is, because MORE is functional and BEAT is verbal.

6.2.2 Implications for representations of lexical categories

This raises interesting questions concerning the representation of lexical categories. In particular, what does it mean for a lexical category to be compatible with degrees? Degrees are most often associated with adjectives. However, arguments have been made as to why we might wish to make them available to other lexical categories, such as nouns and verbs. Sassoon (2017), for example, looks at what it means to apply degrees to nouns in nominal comparisons such as that in (6.10).

(6.10) English nominal comparison
This creature is more a bird than (it is) a mammal. (Sassoon 2017: 155)

In order to create a consistent analysis of comparative constructions as well as account for the behavior of nouns in other gradable constructions, Sassoon argues that nouns

do have degrees available, but that they are associated with a scale that has a different composition than adjectives do. With respect to verbs, Morzycki (2007) looks at why we may want degrees to be compatible with at least some prepositions and verbs so as to provide a uniform analysis of differential phrases as well as to explain the behavior of other measure phrases. As we have seen, differential phrases are typically understood to be predicated of gaps in degrees (Schwarzchild & Wilkinson 2002).

Bringing the discussion about the relationship of degrees to verbs closer to the present study, Beck et al. (2009: 21) note that the compatibility of both Yorùbá and Mooré *exceed* with degree differentials and degree comparisons means "a scale structure of the arguments ... of *exceed* ought to be assumed. We might as well call those arguments degrees, then." The evidence for degrees in the ASL BEAT-construction further contributes to this sense that degree types may be necessary for handling lexical categories other than adjectives. Unlike with the analysis provided for combining degrees with nouns, however, there is no reason so far to assume that the degrees are of a different type than adjectives given how under the analysis currently being entertained, BEAT is introducing the individuals and calculating the degrees for the adjective or gradable property. They should involve compatible degree types. This tracks with the observation by Morzycki (2007) that both verbs and adjectives are able to combine with differential phrases.

However, how and where exactly those degrees are introduced is still open. For example, do some items, like MORE, belong to a functional category and bring degree semantics with them while other items, like BEAT, require null functional morphology that occurs in projections above the verb phrase? A better developed syntax and semantics of BEAT and other comparisons that use the *exceed*-strategy could provide an increased understanding of how, exactly, verbs and adjectives behave with respect to degrees.

Besides providing a deeper understanding of the differences between the MORE- and BEAT-constructions that inform our ideas of lexical categories and and their relationships to degrees, the examination of two constructions that use degrees in

order to form a comparative of superiority has raised some interesting typological possibilities.

6.3 Further typological implications concerning processes of grammaticalization

Analysis of the BEAT-construction in particular is of interest for better understanding the process of grammaticalization of *exceed*-strategy comparatives. We started with the assumption that because BEAT still retains its verbal features in the language and because transitive verbs are (typically) assumed to take two individuals, the comparative use of the BEAT-construction is most likely to involve a comparison of individuals rather than degrees. A question to continue paying attention to is how and in what ways BEAT may further grammaticalize.

There has been some work done on the grammaticalization of *exceed*-strategy comparatives in the Sinitic family, particularly of Cantonese. A strong association between *exceed* comparatives in Cantonese and its formation of resultative constructions (frequently referred to as RVCs in the Sinitic literature) has been observed and is argued to be important for the development of the *exceed* comparative in the language(Ansaldo 2010). (With respect to the similarities to Cantonese RVCs, see also Mok 1998.) However, Cantonese RVCs are generally viewed as involving Serial Verb Constructions (SVCs) that involve verb-verb compounds. (See as an example, Lau & Lee 2015 and references therein.) This differs from what has been argued for resultative constructions in ASL, namely that they involve small-clause constructions (see in particular Loos 2017, but also Kentner & Wilbur 2018). The extent to which this difference does/will impact the path of grammaticalization is not clear, in part because it is not entirely clear how grammaticalized ASL BEAT is in its comparative usage. The fact it cannot undergo WH-doubling for at least some signers in that usage may be indicative of at least some grammaticalization, but it is not clear that it has begun to undergo any kind of phonetic or phonological reduction (largely be-

cause no such phonetic analysis of the data has yet to be made). However, assuming that it is in the process of grammaticalization or has grammaticalized, it provides an important typological data point for comparing how languages with *exceed*-strategy comparisons grammaticalize that construction when they differ with respect to other syntactic parameters. Given that there have been observations about comparative type and event composition in languages more generally (Stassen 1985), this is a variation of particular interest, though we cannot expand much more on it at this point in time.

6.4 Further typological implications concerning representations of comparison

In addition to having implications for the diachronic process of grammaticalization, the results also have implications for the synchronic issue of representing comparisons. While it is well-known and attested that languages do not limit themselves to only one strategy construction for forming such comparisons (Sapir 1944, Stassen 1985), and while different methods of forming such comparisons have been discussed in English (for instance the difference between explicit and implicit comparisons in Kennedy 2007, among others), there has been less discussion directly comparing two or more comparatives belonging to the same language that are argued to make use of degrees. (Though do see Grano & Kennedy 2012 and Lam 2015 for discussions regarding Mandarin.) Here, examining two such constructions highlights two particular but related typological questions. The first question is whether there is any "implicational law" concerning what types of comparison a language may offer. The second is to what extent are the syntax and semantics of each comparison in a language governed by general settings in the language and to what extent are they construction specific?

6.4.1 Additional findings: Even more ways to compare

Before discussing these two questions in more depth, however, there are further findings from this study that need to be introduced. In particular, consultants provided more constructions than those detailed in chapter 1 for forming comparisons in ASL. Here I will provide a brief description of three of the most notable alternatives consultants offered up in response to various items that they found ungrammatical or otherwise odd. I will refer to them as the ABOVE-construction, the PASS-construction, and the MEASURE-construction, respectively.

ABOVE-construction

The first additional construction used for comparison that appeared during data collection is what I will call the ABOVE-construction (6.11).

(6.11) Example ASL ABOVE-construction

dominant hand:	$\overline{\text{BRUNO}}$	$\overline{200}$	$\overset{\text{brow raise}}{\overline{\text{LB}}}$	BETTER(??)	$\overset{\text{puff cheeks}}{\overline{\text{ABOVE}}}$
non-dominant hand:				ABOVE	$\rightarrow$

'Bruno weighs more than 200 pounds.'

This construction was offered by one consultant when trying to test items involving degree comparison. The distinguishing feature is the presence of a variation of the sign ABOVE. In citation form, ABOVE is a two-handed sign produced with both hands forming a bent-B (sometimes more of a flat-C) handshape, palms facing down, in relatively neutral signing space. The fingertips of the dominant hand start out just below the non-dominant hand and then move outwards in a slight arc so as to land at a point in the air above the non-dominant hand. In this case, the non-dominant hand establishes the upper end of the standard of comparison just after the measure phrase is signed. Furthermore, the movement of the dominant hand ends with what appears to be rapid deceleration in addition to being accompanied by puffed cheeks, an NMM frequently associated with large amounts Baker-Shenk & Cokely (1980). A

variation of this construction was also provided by the same signer in response to items testing the grammaticality of differential phrases (6.12).

(6.12) Example ASL ABOVE-construction with differential measure phrase

20 LB ABOVE

'(They) weigh 20 lbs more (than the other person).'

The fact that the same signer suggested this construction for both degree comparisons and for use with differential phrases may indicate that the construction is more strongly associated with measure phrases, but it is not clear whether this is a personal or dialectal preference or is more generally accepted throughout the language. That is, it is unclear how widespread this construction is or what the various stylistic and pragmatic constraints governing its use are.

PASS-construction

The second additional construction that a consultant offered as an alternative to an item they judged ungrammatical is the PASS-construction (6.13).

(6.13) Example ASL PASS-construction

70-YEAR-OLD PASS

'They surpassed 70 years in age.'

Additional context: Subject did not really expect to live to the age of 70.

The distinguishing feature of this construction is the use of the sign PASS, a two-handed sign made with an open-A handshape (closed fist but extended thumb) in neutral signing space where both hands are held palm inward, facing each other and the dominant hand then twists or moves in a slight line so as to advance forward of the non-dominant hand. The example in (6.13) was offered as an alternative in a couple of instances involving OLD in a degree comparative situation. This indicates yet another predicate that can be used in the formation of degree comparatives.

MEASURE-construction

The last additional construction of interest used by a consultant is what I will refer to as the MEASURE-construction (6.14).

(6.14) Example ASL MEASURE-construction

$$\overline{\text{DOOR}_i\ {}_i\text{WIDE TABLE}\ {}_i\text{MEASURE}_{x-axis}}^{\text{brow raise}} \rightarrow \text{MEASURE}_{y-axis} \rightarrow \overline{\text{MEASURE}_{y-axis}\text{-EXTEND}}^{\text{brow lower, 'oo'}}$$

'The table is taller than the door is wide.'

This construction was produced by one of the consultants specifically in response to attempts to elicit subcomparatives. There are two distinguishing features of this construction. The first is the use of the sign MEASURE and the second is the use of space. In its citation form, the sign MEASURE is a two-handed sign produced with each hand forming a Y-handshape, palms face-down, and thumbs of the two hands making contact, resulting in the pinky and thumbs of both sets of hands forming a rough line that parallels the torso. In order to form this particular subcomparative, the consultant first introduced the door and the table into the discourse and then used the sign MEASURE (without contact between the two-hands) signed along the x-axis. All of this was done with raised eyebrows. Then, having returned to neutral eyebrows and without resetting the handshape, the hands were rotated so that the palms were now facing contra-laterally but the hands were still in line with each other. Finally, again maintaining the same handshape configuration, they lowered their brows, rounded their lips, and moved their hands away from each other, with most of the movement occurring in the uppermost hand. It is not at all clear how widely accepted this strategy for this type of comparison is, but this solution is of particular interest given the way it manipulates spatial relations and the visual medium to compare two items along two different dimensions that differ with respect to spatial orientation, but not with respect to the units of measurement typically associated with them.

6.4.2 Intra- and inter-linguistic differences between comparisons

This rich linguistic variety for expressing comparative (or at least comparative-like) propositions highlights the need to expand the cross-linguistic program of research on comparatives. We have seen in our review of (potential) comparison constructions in ASL an example of every one of the strategies outlined in Stassen (1985) and more. We have seen a *particle*-type and an *exceed*-type strategy construction, namely the MORE- and BEAT-constructions that have formed the backbone of the current study. However, we have also seen an example of a second candidate for a *exceed*-type strategy, namely PASS, a candidate for a *location*-type strategy in ABOVE, and a general but prominently used *conjunction*-type strategy in the *contrastive construction*. And we still have three additional constructions that seem to express comparison (of superiority) in some manner. The question becomes not only which construction is the "default" comparison in ASL, but perhaps more importantly, have these comparison strategies been under-reported in other languages? And furthermore, are there any implicational laws governing the constructions that a given language has available for use? For instance, if a language has a *particle*-strategy comparative, can you reliably predict that it will then also have a *conjoined*-strategy comparative available for use? Again, the current study obviously has no way available to answer this particular set of questions. However, they are questions worth asking as we move forward with future research.

Another question this study highlights with respect to typological considerations is to what extent are the syntactic-semantic features of any given construction informed by the general parameter settings of the language and to what extent are those features governed by the syntax/semantics interface? To take what is probably the most extreme case, could there ever be an instance where comparatives formed with the *conjoined*-strategy utilize degrees or does the syntax of that strategy simply prevent it?

In chapter 2, we saw two general, complementary (and needed) approaches to cross-linguistic work on comparative constructions. In the first approach, exemplified by Beck et al. (2009), the main comparative strategy for several languages was checked for compatibility with various syntactic and semantic features associated with degrees and those features were then analyzed for bi-conditional and dependency relationships. The other approach, exemplified by Kennedy (2007), sought to encode some of these observations in the lexical denotations languages can select from for building their comparisons and related degree structures.

For this study, the language of analysis largely followed that of Kennedy (2007) as it made it easier to posit predictions about the differences between the two constructions under investigation and later, to explain any differences that were found. However, the study also incorporated aspects of the Beck et al. (2009) approach in the tests used. Three of the tests in particular are associated with proposed parameters of variation. In particular, the differential comparatives and degree comparisons are associated with the degree semantics parameter (are degrees present in the language?) and the subcomparatives test is associated with the degree phrase parameter (can there be overt material in the specifier of a degree phrase?). For reasons detailed in chapter 3, the study could not include any tests associated with the degree abstraction parameter (can degrees be quantified over?). This combined with examining two constructions belonging to the same language provides us with another approach for addressing these questions about the extent to which the behavior of any one construction can be predicted by what strategy it employs and the extent to which it depends on language-specific settings.

The results of this study point to subcomparatives as needing particular attention. We saw that both the MORE- and BEAT-constructions allowed the formation of degree differentials and degree comparisons, which was expected both on grounds of our assumptions about syntax/semantics matching principles (*particle*-strategy with overt comparative morphology constructions should pattern most closely together and *exceed*-strategy constructions should pattern most closely together) and language-

specific assumptions (that we already had some evidence that the language permitted degrees). However, the results concerning subcomparatives were where the two approaches stood to diverge the most. To oversimplify and overstate the argument, if language specific settings were more important, then both constructions would form subcomparatives, but if construction specific settings were more important, then only the MORE-construction would form them.

However, results were not clear-cut. To start with, acceptance of anything that resembled subcomparatives seemed to depend more on the individual consultant rather than on the particular construction. This outcome is not really expected on either extreme version of the argument.[3] Also, while I have argued that there is reason to believe that the apparent subcomparatives with the BEAT-construction involve nominalization of dimensions and/or degrees, this argument in some respects only side-steps the issue. It explains the current data with respect to the proposed analyses, but it opens questions concerning the existent literature, beginning with whether these cases are still properly considered subcomparatives under that proposed analysis.[4] If they are, then in what ways do we need to rethink their licensing conditions? If the argument I have made for the apparent cases with the BEAT-construction does not hold, what does that say about cross-linguistic variation? Even if it turns out BEAT is a comparison of degrees, a clausal comparison, after all, we would be faced with the question of what a language would need with two clausal comparatives. We have seen some indication that multiple comparison constructions may allow for encoding of other relevant semantic and pragmatic features, such as speaker or contex-

[3]And also raises the question of how widely accepted subcomparatives are out of the blue even in languages for which they are well-attested, like English. I could find no study with a survey format that polled native English speakers for their judgments on subcomparatives and therefore, have no percentage of acceptability to compare the results of this study with for further contextualization. I do know at least one native English speaker who was unwilling to immediately accept a subcomparative example–and even then their acceptance was not a personal acceptance but an acceptance of the intuitions of two other native English speakers present–and therefore, that agreement is not one hundred percent.

[4]With the understanding that subcomparatives are a special case with respect to subdeletion, it is obvious apparent cases that involve nominalized dimensions should not count as subcomparatives. However, I leave open the possibility there may be reasons we would want to expand the definition of subcomparatives.

tual expectations in the case of BEAT. The flexibility to foreground different aspects could, therefore, provide some explanatory power. However, it is unclear at this time whether such an explanation is likely to be language-dependent or if cross-linguistic patterns would emerge.

6.5 Concluding remarks

This study has demonstrated clear differences in the behavior of ASL MORE- and BEAT-constructions, particularly with respect to the syntactic behavior of their comparative predicates. On the evidence currently available, it seems most likely that MORE is a comparison of degrees (with overt comparative morphology) and that BEAT is a comparison of individuals, analyses that lead to clear predictions that can be tested as work continues on each construction. We have seen how complex sociolinguistic factors are likely to be impacting grammaticality judgments given to MORE-constructions and how word-order constraints as well as possible structural ambiguity may be responsible for the high level of variability seen with judgments concerning BEAT. We have also made major inroads concerning the distributional patterns of two common modifiers of gradable properties, *intensive aspect* and Y-OO, showing that neither appears to have a semantic denotation that raises the contextual standard, which is to say that they do not have a semantic denotation like that of English *very*. And through all of this we have seen the rich variety available both within and between languages for the expression of what is frequently thought of as one of the most basic, essential cognitive functions necessary for the development of ideas: the ability to draw comparisons.

APPENDICES

A. TEST ITEMS BY RESEARCH QUESTION AND TEST TYPE

RQ1: Locating clausal boundaries and constituents

WH-doubling test

Target: Comparee

(A.1) $\overline{\text{WHO BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$

*Intended: '**Who** beats the queen for beauty?'*

(A.2) $\overline{\text{WHO MORE BEAUTIFUL THAN QUEEN WHO}}^{\text{whq}}$

*Intended: '**Who** is more beautiful than the queen?'*

(A.3) $\overline{\text{WHO BEAUTIFUL BEAT QUEEN WHO}}^{\text{whq}}$

*Intended: '**Who** beats the queen for beauty?'*

(A.4) $\overline{\text{WHO BEAUTIFUL BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$

*Intended: '**Who** beats the queen for beauty?'*

Target: Standard of comparison

(A.5) $\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT WHO}}^{\text{whq}}$

*Intended: '**Who** does Snow-white beat for beauty?'*

(A.6) $\overline{\text{WHO SNOW-WHITE BEAT BEAUTIFUL WHO}}^{\text{whq}}$

*Intended: '**Who** does Snow-White beat for beauty?'*

(A.7) $\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT BEAUTIFUL WHO}}^{\text{whq}}$

*Intended: '**Who** does Snow-White beat for beauty?'*

(A.8) $\overline{\text{WHO SNOW-WHITE MORE BEAUTIFUL THAN WHO}}^{\text{whq}}$

*Intended: '**Who** is Snow-White more beautiful than?'*

Target: Comparative predicate

(A.9) $\overline{\text{HOW SNOW-WHITE BEAT QUEEN HOW}}^{\text{whq}}$

*Intended: '**How/in what way** does Snow-White beat the queen?'*

(A.10) $\overline{\text{HOW SNOW-WHITE MORE THAN QUEEN HOW}}^{\text{whq}}$

*Intended: '**How/in what way** is Snow-White more than the queen?'*

Target: Standard marker

(A.11) $\overline{\text{\#DO-DO SNOW-WHITE QUEEN \#DO-DO}}^{\text{whq}}$

*Intended: 'What does Snow-White **do** (to) the queen?'*

(A.12) $\overline{\text{\#DO-DO SNOW-WHITE QUEEN BEAUTIFUL \#DO-DO}}^{\text{whq}}$

*Intended: 'What does Snow-White **do** (to) the queen for/with respect to her beauty?'*

RQ2: Relationship to the positive form

Picture description task

Set 1: Frame provided was *bolded-name* BEAT WHO BIG

Set 2: Frame provided was *bolded-name* MORE BIG THAN WHO

Note: For each picture for each construction, consultants were requested to fill in the frame provided. That is, they were asked to use the bolded name as the comparee and then to indicate who in the picture could serve as the standard of comparison.

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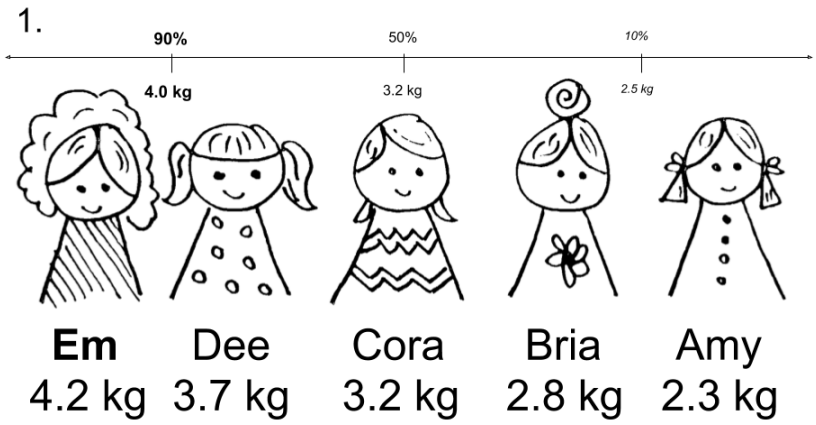
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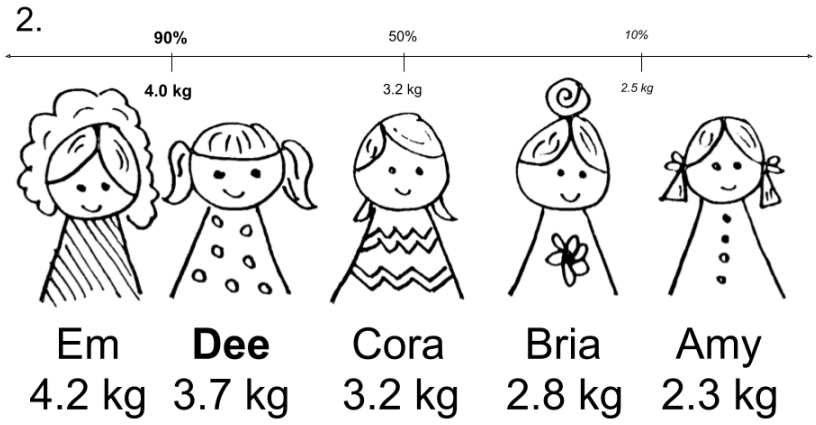
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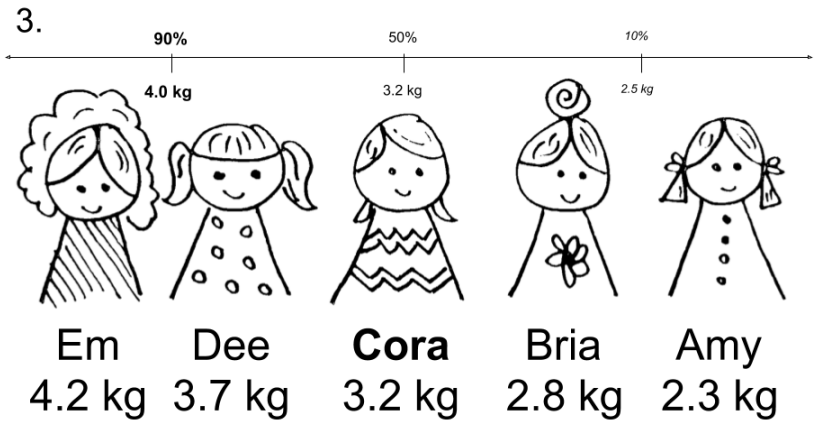
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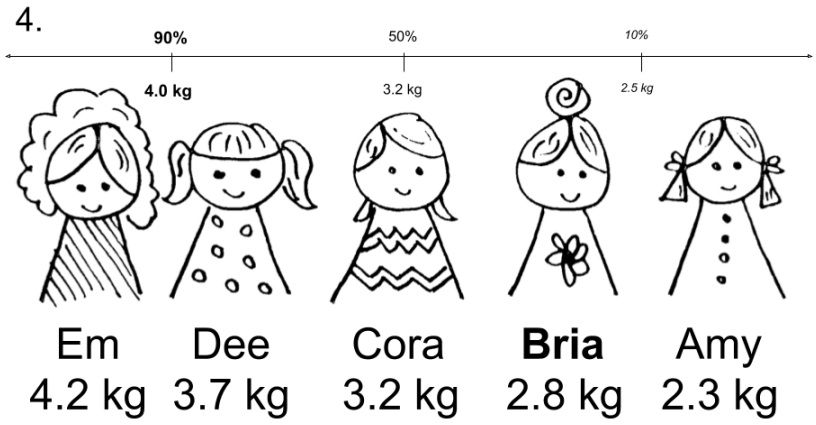
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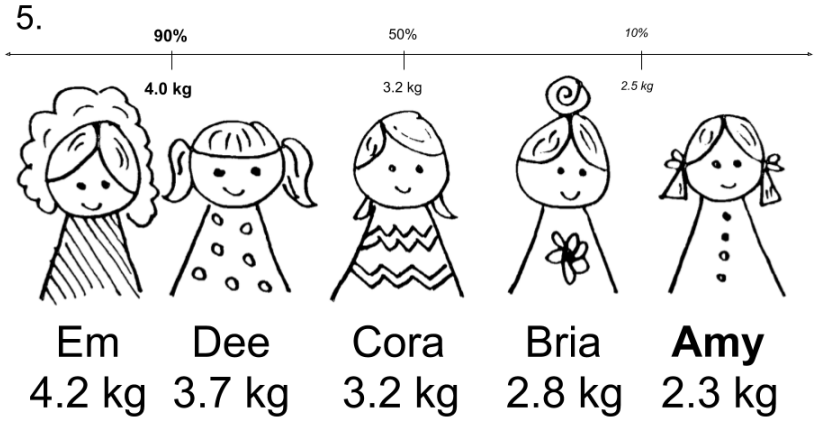


RQ3: Composition of the standard of comparison

Question-embedding predicates

(A.18) IX-3_{max} WONDER $\overline{\text{IX-}3_{student}\ \text{SMART}}^{\text{cond}}$

Intended: 'Max wonders whether they are smart.'

(A.19) $\overline{\text{IX-}3_{max}\ \text{WONDER WHO SMART}}^{\text{whq}}$

Intended: 'Who did Max wonder whether they were smart.'

(A.20) $\overline{\text{IX-}3_{max}\ \text{WONDER SMART WHO}}^{\text{whq}}$

Intended: 'Who did Max wonder whether they were smart.'

(A.21) $\overline{\text{IX-}3_{max}\ \text{THINK WHO SMART}}^{\text{whq}}$

Intended: 'Who did Max think they were smart?'

(A.22) $\overline{\text{IX-}3_{max}\ \text{THINK SMART WHO}}^{\text{whq}}$

Intended: 'Who did Max think they were smart?'

(A.23) M-A-R-Y MORE TALL-1 THAN IX-1 THINK

Intended: 'Mary is taller than I realized.'

(A.24) M-A-R-Y TALL-1 MORE THAN IX-1 WONDER

Intended: 'Mary is taller than I wondered.'

(A.25) M-A-R-Y (TALL-1) BEAT IX-1 THINK (TALL-1)

Intended: 'Mary (is tall.) She beats what I thought (with respect to her tallness).'

(A.26) M-A-R-Y (TALL-1) BEAT IX-1 WONDER (TALL-1)

Intended: 'Mary (is tall.) She beats what I wondered (with respect to her tallness).'

Time adverbials

(A.27) M-A-R-Y MORE TALL-1 THAN 5-YEAR-PAST

Intended: 'Mary is taller than she was 5 years ago.'

(A.28) M-A-R-Y BEAT TALL-1 5-YEAR-PAST

Intended: 'Mary beats herself with respect to tallness 5 years ago.'

RQ4: presence and location of degrees

Degree differentials

(A.29) BRUNO BEAT KARL (HEAVY/TALL-1/OLD) 20LB/2-INCHES/5-YEARS

Intended: 'Bruno beats Karl's weight/height/age by 20lbs/2 inches/5 years.'

(A.30) BRUNO 20LB/2-INCHES/5-YEARS BEAT KARL (HEAVY/TALL-1/OLD)

Intended: 'Bruno by 20lbs/2 inches/ 5 years beats Karl (with respect to weight/height/age).'

(A.31) BRUNO BEAT KARL 20LB/2-INCHES/5-YEARS (HEAVY/TALL-1/OLD)

Intended: 'Bruno beats Karl by 20lbs/2-inches/5-years (with respect to weight/height/age).'

(A.32) TODAY 5-DEGREES BEAT YESTERDAY (HOT)

Intended: 'Today by 5-degrees beats yesterday (with respect to hotness).'

(A.33) TODAY BEAT YESTERDAY 5-DEGREES (HOT)

Intended: 'Today beats yesterday by 5-degrees (with respect to hotness).'

(A.34) TODAY 5-DEGREES (HOT) BEAT YESTERDAY

Intended: 'Today by five degrees (with respect to hotness) beats yesterday.'

(A.35) BRUNO 20LB/2-INCHES/5-YEARS MORE (HEAVY/TALL-1/OLD) THAN KARL

Intended: 'Bruno is 20lb/2-inches/5-years more heavy/tall/old than Karl.'

(A.36) BRUNO (HEAVY/TALL-1/OLD) 20LB/2-INCHES/5-YEARS MORE THAN KARL

Intended: 'Bruno is 20lb/2-inches/5-years more heavy/tall/old than Karl.'

(A.37) BRUNO 20LB/2-INCHES/5-YEARS (HEAVY/TALL-1/OLD) MORE THAN KARL

Intended: 'Bruno is 20lb/2-inches/5-years more heavy/tall/old than Karl.'

(A.38) BRUNO 5-YEARS OLD.UP THAN KARL

Intended: 'Bruno is 5-years older than Karl.'

(A.39) BRUNO MORE (HEAVY/TALL-1/OLD) THAN KARL 20LB/2-INCHES/5-YEARS

Intended: 'Bruno is 20lb/2-inches/5-years more heavy/tall/old than Karl.'

(A.40) BRUNO OLD.UP THAN KARL 5-YEARS

Intended: 'Bruno is 5-years older than Karl.'

(A.41) TODAY 5-DEGREES MORE HOT THAN YESTERDAY

Intended: 'Today is 5-degrees hotter than yesterday.'

(A.42) TODAY MORE HOT 5-DEGREES THAN YESTERDAY

Intended: 'Today is 5-degrees hotter than yesterday.'

(A.43) TODAY 5-DEGREES HOT MORE THAN YESTERDAY

Intended: 'Today is 5-degrees hotter than yesterday.'

(A.44) TODAY HOT MORE THAN YESTERDAY 5-DEGREES

Intended: Today is 5-degrees hotter than yesterday.'

Degree comparisons

(A.45) BRUNO BEAT 6' 3"/200LB/70-YEARS

Intended: 'Bruno beats 6' 3"/200lb/70-years.'

(A.46) BRUNO FINISH BEAT 6' 3"/200LB/70-YEARS

Intended: 'Bruno beats 6' 3"/200lb/70-years.'

(A.47) BRUNO BEAT TALL-1/HEAVY/OLD 6' 3"/200LB/70-YEARS

Intended: 'Bruno beats the tallness/weight/age of 6' 3"/200lb/70-years.'

(A.48) BRUNO BEAT 6'3"/200LB/70-YEARS TALL-1/HEAVY/OLD

Intended: 'Bruno beats 6'3"/200lb/70-years with respect to his height/weight/age.'

(A.49) BRUNO FINISH BEAT TALL-1/HEAVY/OLD 6' 3"/200LB/70-YEARS

Intended: 'Bruno beats the tallness/weight/age of 6'3"/200lb/70-years.'

(A.50) BRUNO FINISH BEAT 6' 3"/200LB/70-YEARS TALL-1/HEAVY/OLD

Intended: 'Bruno beats 6' 3"/200lb/70-years with respect to his height/weight/age.'

(A.51) BRUNO MORE THAN 6' 3"/200LB/70-YEARS

Intended: 'Bruno is more than 6' 3"/200lb/70-years.'

(A.52) BRUNO MORE TALL-1/HEAVY/OLD THAN 6' 3"/200LB/70-YEARS

Intended: 'Bruno is taller/heavier/older than 6' 3"/200lb/70-years.'

(A.53) BRUNO MORE THAN 6'3"/200LB/70-YEARS TALL-1/HEAVY/OLD

Intended: 'Bruno is more than 6' 3"/200lb/70-years tall/heavy/old.'

Degree competition

(A.54) EVA SMART

Intended: 'Eva is smart.'

(A.55) EVA SMART$_{intensive}$

Intended: 'Eva's very smart.'

(A.56) EVA BEAT BOB SMART$_{intensive}$

Intended: 'Eva beats Bob with respect to being very smart.'

(A.57) EVA MORE SMART$_{intensive}$ THAN BOB

Intended: 'Eva's more very smart than Bob.'

(A.58) EVA Y-OO SMART

Intended: 'Eva's really smart.'

(A.59) EVA Y-OO BEAT BOB SMART

Intended: 'Eva really beats Bob with respect to smarts.'

(A.60) EVA BEAT BOB Y-OO SMART

Intended: 'Eva beats Bob really smart.'

(A.61) EVA Y-OO MORE SMART THAN BOB

Intended: 'Eva's really more smart than Bob.'

(A.62) EVA MORE Y-OO SMART THAN BOB

Intended: 'Eva's more really smart than Bob.'

(A.63) EVA MORE SMART Y-OO THAN BOB

Intended: 'Eva's more smart really than Bob.'

Subcomparatives

(A.64) EVA MORE SMART THAN BOB FRIENDLY

Intended: 'Eva's smarter than Bob is friendly.'

(A.65) BOB MORE FRIENDLY THAN SMART

Intended: 'Bob's more friendly than (he is) smart.'

(A.66) BOB FRIENDLY BEAT EVA SMART

Intended: 'Bob's friendliness beats Eva's smartness.'

(A.67) EVA SMART BEAT (EVA) FRIENDLY

Intended: 'Eva's smartness beats (her) friendliness.'

(A.68) TABLE MORE TALL-1 THAN DOOR WIDE

Intended: 'The table is taller than the door is wide.'

(A.69) TABLE TALL-1 MORE THAN DOOR WIDE

Intended: 'The table is taller than the door is wide.'

(A.70) DOOR MORE WIDE THAN TALL-1

Intended: 'The door is wider than (it is) tall.'

(A.71) DOOR WIDE MORE THAN TALL-1

Intended: 'The door is wider than (it is) tall.'

(A.72) DOOR A MORE TALL-1 THAN DOOR B WIDE

Intended: 'Door A is taller than door B is wide.'

(A.73) DOOR A TALL-1 MORE THAN DOOR B WIDE

Intended: 'Door A is taller than door B is wide.'

(A.74) TABLE TALL-1 BEAT DOOR WIDE

Intended: 'The table's tallness beats the door's wideness.'

(A.75) DOOR WIDE BEAT (DOOR) TALL-1

Intended: 'The door's wideness beats (its) tallness.'

(A.76) DOOR A TALL-1 BEAT DOOR B WIDE

Intended: 'Door A's height beats door B's width.'

B. TEST ITEMS BY BLOCK WITH CONTEXTS

Note throughout: Notes on contexts and tasks were in English, but excepting piloting with the first consultant, contexts and tasks were presented to consultants in ASL

Block A

Context 1

Situation: Deborah is telling the story of Snow-White to little children. She has just finished telling them the part where the mirror informs the Queen that Snow-White is the most beautiful person in the land. Deborah wants to ask them a question to check their comprehension and keep them engaged with the story.

Task: Judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.) Also, if the question sounds natural, what would an expected answer be?

(B.1) $\overline{\text{WHO BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$

*Intended: '**Who** beats the queen for beauty?'*

(B.2) $\overline{\text{WHO MORE BEAUTIFUL THAN QUEEN WHO}}^{\text{whq}}$

*Intended: '**Who** is more beautiful than the queen?'*

(B.3) $\overline{\text{WHO BEAUTIFUL BEAT QUEEN WHO}}^{\text{whq}}$

*Intended: '**Who** beats the queen for beauty?'*

(B.4) $\overline{\text{WHO BEAUTIFUL BEAT QUEEN BEAUTIFUL WHO}}^{\text{whq}}$

*Intended: '**Who** beats the queen for beauty?'*

(B.5) $\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT WHO}}^{\text{whq}}$

*Intended: '**Who** does Snow-white beat for beauty?'*

(B.6) $\overline{\text{WHO SNOW-WHITE BEAT BEAUTIFUL WHO}}^{\text{whq}}$

*Intended: '**Who** does Snow-White beat for beauty?'*

(B.7) $\overline{\text{WHO SNOW-WHITE BEAUTIFUL BEAT BEAUTIFUL WHO}}^{\text{whq}}$

*Intended: '**Who** does Snow-White beat for beauty?'*

(B.8) $\overline{\text{WHO SNOW-WHITE MORE BEAUTIFUL THAN WHO}}^{\text{whq}}$

*Intended: '**Who** is Snow-White more beautiful than?'*

(B.9) $\overline{\text{HOW SNOW-WHITE BEAT QUEEN HOW}}^{\text{whq}}$

*Intended: '**How/in what way** does Snow-White beat the queen?'*

(B.10) $\overline{\text{HOW SNOW-WHITE MORE THAN QUEEN HOW}}^{\text{whq}}$

*Intended: '**How/in what way** is Snow-White more than the queen?'*

(B.11) $\overline{\#\text{DO-DO SNOW-WHITE QUEEN }\#\text{DO-DO}}^{\text{whq}}$

*Intended: 'What does Snow-White **do** (to) the queen?'*

(B.12) $\overline{\#\text{DO-DO SNOW-WHITE QUEEN BEAUTIFUL }\#\text{DO-DO}}^{\text{whq}}$

*Intended: 'What does Snow-White **do** (to) the queen for/with respect to her beauty?'*

Context 2

Situation: Deborah is describing her friend, Bruno, to you. **Task:** Judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.)

(B.13) BRUNO BEAT 6' 3"/200LB/70-YEARS

Intended: 'Bruno beats 6' 3"/200lb/70-years.'

(B.14) BRUNO FINISH BEAT 6' 3"/200LB/70-YEARS

Intended: 'Bruno beats 6' 3"/200lb/70-years.'

(B.15) BRUNO BEAT TALL-1/HEAVY/OLD 6' 3"/200LB/70-YEARS

Intended: 'Bruno beats the tallness/weight/age of 6' 3"/200lb/70-years.'

(B.16) BRUNO BEAT 6'3"/200LB/70-YEARS TALL-1/HEAVY/OLD

Intended: 'Bruno beats 6'3"/200lb/70-years with respect to his height/weight/age.'

(B.17) BRUNO FINISH BEAT TALL-1/HEAVY/OLD 6' 3"/200LB/70-YEARS

Intended: 'Bruno beats the tallness/weight/age of 6'3"/200lb/70-years.'

(B.18) BRUNO FINISH BEAT 6' 3"/200LB/70-YEARS TALL-1/HEAVY/OLD

Intended: 'Bruno beats 6' 3"/200lb/70-years with respect to his height/weight/age.'

(B.19) BRUNO MORE THAN 6' 3"/200LB/70-YEARS

Intended: 'Bruno is more than 6' 3"/200lb/70-years.'

(B.20) BRUNO MORE TALL-1/HEAVY/OLD THAN 6' 3"/200LB/70-YEARS

Intended: 'Bruno is taller/heavier/older than 6' 3"/200lb/70-years.'

(B.21) BRUNO MORE THAN 6'3"/200LB/70-YEARS TALL-1/HEAVY/OLD

Intended: 'Bruno is more than 6' 3"/200lb/70-years tall/heavy/old.'

Context 3

Situation: Deborah is on a hiring committee. She is discussing two job candidates, Eva and Bob.

Task: Judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.)

(B.22) EVA SMART

Intended: 'Eva is smart.'

(B.23) EVA SMART$_{intensive}$

Intended: 'Eva's very smart.'

(B.24) EVA BEAT BOB SMART$_{intensive}$

Intended: 'Eva beats Bob very smart.'

(B.25) EVA MORE SMART$_{intensive}$ THAN BOB

Intended: 'Eva's more very smart than Bob.'

(B.26) EVA Y-OO SMART

Intended: 'Eva's really smart.'

(B.27) EVA Y-OO BEAT BOB SMART

Intended: 'Eva really beats Bob with respect to smarts.'

(B.28) EVA BEAT BOB Y-OO SMART

Intended: 'Eva beats Bob really smart.'

(B.29) EVA Y-OO MORE SMART THAN BOB

Intended: 'Eva's really more smart than Bob.'

(B.30) EVA MORE Y-OO SMART THAN BOB

Intended: 'Eva's more really smart than Bob.'

(B.31) EVA MORE SMART Y-OO THAN BOB

Intended: 'Eva's more smart really than Bob.'

Block B

Context 4

Situation: The average weight of a newborn baby is about 3.2 kilograms. Medically, a newborn is considered large for its age if it is born at more than approximately 4.0 kilograms and small for its age if it born at less than around 2.5 kilograms. (10% of

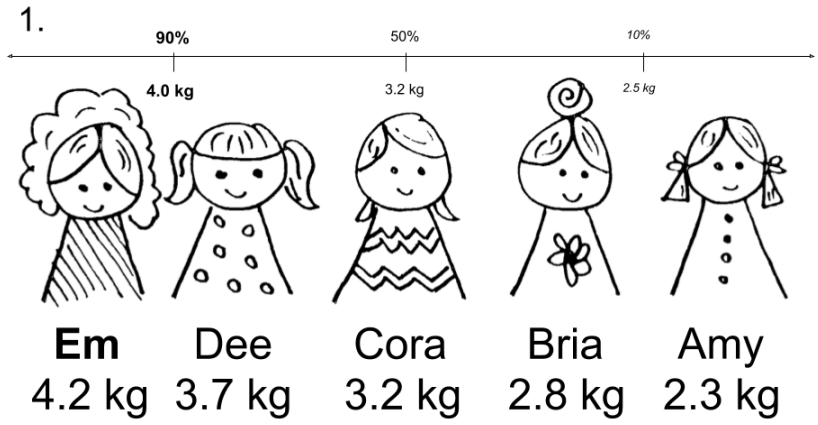
babies are born weighing more than 4,000 grams and 10% of babies are born weighing less than 2,500 grams.) Deborah is talking about the birth weights of her five children and comparing them with each other.[1]

Task: For each slide, indicate which options can be used with the bolded name as the subject and still have the utterance be true and feel natural in ASL.

Set 1: BOLD BEAT WHO BIG

Set 2: BOLD MORE BIG THAN WHO

(B.32)



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[1]Source: University of Rochester Medical Center's Health Encyclopedia Entries: Large for Gestational Age, Newborn Measurements, and Small for Gestational Age. Retrieved Online.

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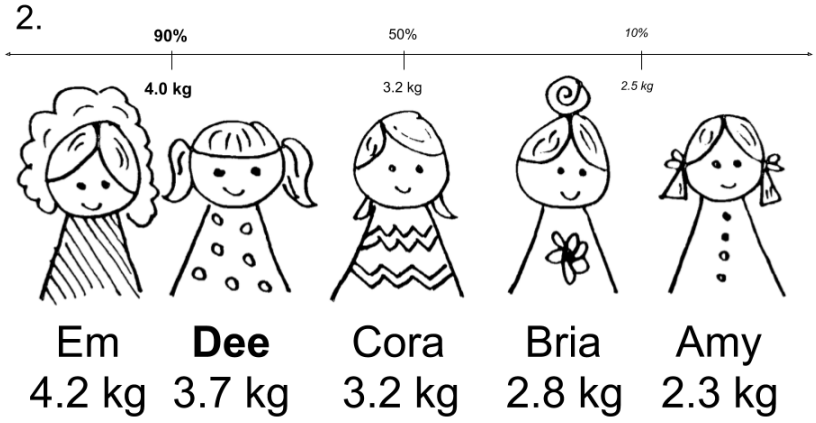
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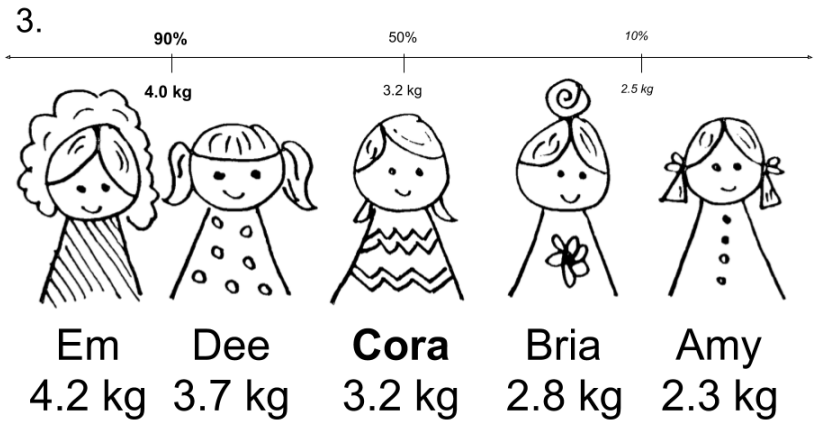
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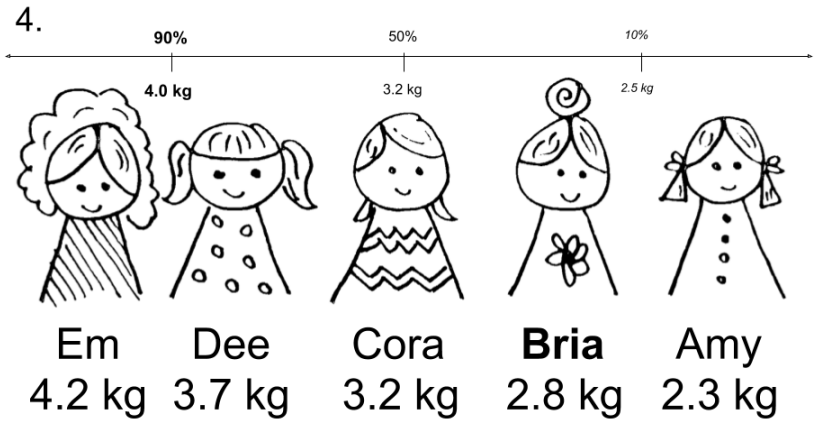
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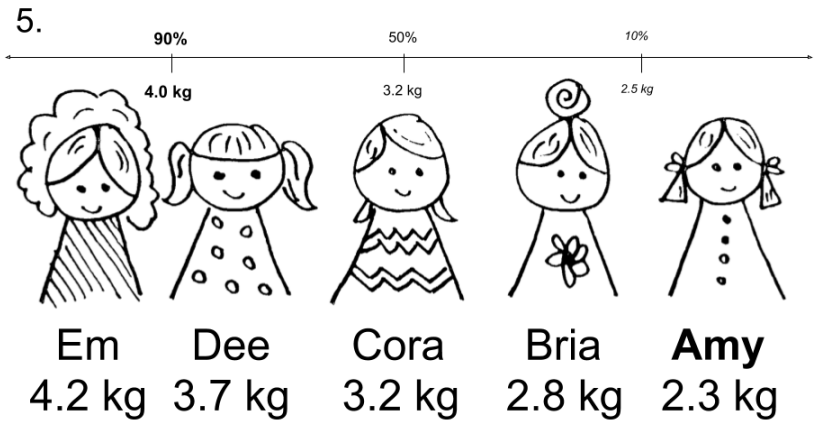
4.0 kg
3.2 kg
2.5 kg
Em
4.2 kg
Dee
3.7 kg
Cora
3.2 kg
Bria
2.8 kg
Amy
2.3 kg

(B.36)



Block C

Context 5 (cf. Context 3)

Situation: Remember earlier context where Deborah is describing two job candidates? Now she's comparing their strengths and weaknesses.

Task: Judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.)

(B.37) EVA MORE SMART THAN BOB FRIENDLY

Intended: 'Eva's smarter than Bob is friendly.'

(B.38) BOB MORE FRIENDLY THAN SMART

Intended: 'Bob's more friendly than (he is) smart.'

(B.39) BOB FRIENDLY BEAT EVA SMART

Intended: 'Bob's friendliness beats Eva's smartness.'

(B.40) EVA SMART BEAT (EVA) FRIENDLY

Intended: 'Eva's smartness beats (her) friendliness.'

Context 6

Situation: Deborah is describing a room and is comparing a table and a door. **Task:** Referencing pictures, judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.)

(B.41) TABLE MORE TALL-1 THAN DOOR WIDE

Intended: 'The table is taller than the door is wide.'

(B.42) TABLE TALL-1 MORE THAN DOOR WIDE

Intended: 'The table is taller than the door is wide.'

(B.43) DOOR MORE WIDE THAN TALL-1

Intended: 'The door is wider than (it is) tall.'

(B.44) DOOR WIDE MORE THAN TALL-1

Intended: 'The door is wider than (it is) tall.'

(B.45) DOOR A MORE TALL-1 THAN DOOR B WIDE

Intended: 'Door as is taller than door b is wide.'

(B.46) DOOR A TALL-1 MORE THAN DOOR B WIDE

Intended: 'Door as is taller than door b is wide.'

(B.47) TABLE TALL-1 BEAT DOOR WIDE

Intended: 'The table's tallness beats the door's wideness.'

(B.48) DOOR WIDE BEAT (DOOR) TALL-1

Intended: 'The door's wideness beats (its) tallness.'

(B.49) DOOR A TALL-1 BEAT DOOR B WIDE

Intended: 'Door A's height beats door B's width.'

Context 7

Situation: Deborah is comparing two of her friends, Bruno and Karl. **Task:** Judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.)

(B.50) BRUNO BEAT KARL (HEAVY/TALL-1/OLD) 20LB/2-INCHES/5-YEARS
Intended: 'Bruno beats Karl's weight/height/age by 20lbs/2 inches/5 years.'

(B.51) BRUNO 20LB/2-INCHES/5-YEARS BEAT KARL (HEAVY/TALL-1/OLD)
Intended: 'Bruno by 20lbs/2 inches/ 5 years beats Karl (with respect to weight/height/age).'

(B.52) BRUNO BEAT KARL 20LB/2-INCHES/5-YEARS (HEAVY/TALL-1/OLD)
Intended: 'Bruno beats Karl by 20lbs/2-inches/5-years (with respect to weight/height/age).'

(B.53) BRUNO 20LB/2-INCHES/5-YEARS MORE (HEAVY/TALL-1/OLD) THAN KARL
Intended: 'Bruno is 20lb/2-inches/5-years more heavy/tall/old than Karl.'

(B.54) BRUNO (HEAVY/TALL-1/OLD) 20LB/2-INCHES/5-YEARS MORE THAN KARL
Intended: 'Bruno is 20lb/2-inches/5-years more heavy/tall/old than Karl.'

(B.55) BRUNO 20LB/2-INCHES/5-YEARS (HEAVY/TALL-1/OLD) MORE THAN KARL
Intended: 'Bruno is 20lb/2-inches/5-years more heavy/tall/old than Karl.'

(B.56) BRUNO 5-YEARS OLD.UP THAN KARL
Intended: 'Bruno is 5-years older than Karl.'

(B.57) BRUNO MORE (HEAVY/TALL-1/OLD) THAN KARL 20LB/2-INCHES/5-YEARS
Intended: 'Bruno is 20lb/2-inches/5-years more heavy/tall/old than Karl.'

(B.58) BRUNO OLD.UP THAN KARL 5-YEARS
Intended: 'Bruno is 5-years older than Karl.'

Context 8

Situation: Deborah recently found out that her friend, Mary, is 6 ft tall. **Task:** Judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.)

(B.59) M-A-R-Y MORE TALL-1 THAN 5-YEAR-PAST

Intended: 'Mary is taller than she was 5 years ago.'

(B.60) M-A-R-Y BEAT TALL-1 5-YEAR-PAST

Intended: 'Mary beats herself with respect to tallness 5 years ago.'

(B.61) M-A-R-Y MORE TALL-1 THAN IX-1 THINK

Intended: 'Mary is taller than I realized.'

(B.62) M-A-R-Y (TALL-1) BEAT IX-1 THINK (TALL-1)

Intended: 'Mary (is tall.) She beats what I realized (with respect to her tallness).'

(B.63) M-A-R-Y TALL-1 MORE THAN IX-1 WONDER

Intended: 'Mary is taller than I wondered.'

(B.64) M-A-R-Y (TALL-1) BEAT IX-1 WONDER (TALL-1)

Intended: 'Marry (is tall.) She beats what I wondered (with respect to her tallness).'

Context 9

Situation: Deborah's friend, Max, teaches a class. You also know Max. Max frequently talks with both of you about the students in his class, but Deborah has a hard time remembering names. Deborah is currently talking with you about a new student in Max's class. She says the following things at different points in her conversation with you. **Task:** Judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.)

(B.65) IX-3_{max} WONDER $\overline{\text{IX-}3_{student}\ \text{SMART}}^{\text{cond}}$

Intended: 'Max wonders whether they are smart.'

(B.66) $\overline{\text{IX-}3_{max}\ \text{WONDER WHO SMART}}^{\text{whq}}$

Intended: 'Who did Max wonder whether they were smart.'

(B.67) $\overline{\text{IX-}3_{max}\ \text{WONDER SMART WHO}}^{\text{whq}}$

Intended: 'Who did Max wonder whether they were smart.'

(B.68) $\overline{\text{IX-}3_{max}\ \text{THINK WHO SMART}}^{\text{whq}}$

Intended: 'Who did Max think they were smart?'

(B.69) $\overline{\text{IX-}3_{max}\ \text{THINK SMART WHO}}^{\text{whq}}$

Intended: 'Who did Max think they were smart?'

Context 10

Situation: Deborah is comparing the weather of two different days she went hiking last summer. The high for one day was 95 and the high for the other was 90. **Task:** Judge how natural the following are in ASL. (Ask to repeat the signed utterance before deciding.)

(B.70) TODAY 5-DEGREES BEAT YESTERDAY (HOT)

Intended: 'Today by 5-degrees beats yesterday (with respect to hotness).'

(B.71) TODAY BEAT YESTERDAY 5-DEGREES (HOT)

Intended: 'Today beats yesterday by 5-degrees (with respect to hotness).'

(B.72) TODAY 5-DEGREES (HOT) BEAT YESTERDAY

Intended: 'Today by five degrees (with respect to hotness) beats yesterday.'

(B.73) TODAY 5-DEGREES MORE HOT THAN YESTERDAY

Intended: 'Today is 5-degrees hotter than yesterday.'

(B.74) TODAY MORE HOT 5-DEGREES THAN YESTERDAY

Intended: 'Today is 5-degrees hotter than yesterday.'

(B.75) TODAY 5-DEGREES HOT MORE THAN YESTERDAY

Intended: 'Today is 5-degrees hotter than yesterday.'

(B.76) TODAY HOT MORE THAN YESTERDAY 5-DEGREES

Intended: Today is 5-degrees hotter than yesterday.'

LIST OF REFERENCES

Bibliography

Aarons, Debra. 1996. Topics and topicalization in American Sign Language. *Stellenbosch Papers in Linguistics* 30. 65–106.

Abner, Natasha & Ronnie B Wilbur. 2017. Quantification in American Sign Language. In *Handbook of quantifiers in natural language: volume ii*, 21–59. Springer.

Abney, Steven P. 1987. *The English noun phrase in its sentential aspect*. Massachusetts Institute of Technology dissertation.

Alrenga, Peter & Christopher Kennedy. 2014. No more shall we part: quantifiers in English comparatives. *Natural Language Semantics* 22(1). 1–53.

Alrenga, Peter, Christopher Kennedy & Jason Merchant. 2012. A new standard of comparison. In *Proceedings of WCCFL*, vol. 30, 32–42.

Ansaldo, Umberto. 2004. The correlation between surpass comparatives and verby languages. In *Papers from the Eleventh Annual Meeting of the Southeast Asian Linguistics Society*, 1–12.

Ansaldo, Umberto. 2010. Surpass comparatives in Sinitic and beyond: typology and grammaticalization. *Linguistics* 48(4). 919–950.

Baker-Shenk, Charlotte Lee & Dennis Cokely. 1980. American Sign Language: a teacher's resource text on grammar and culture. *Green Books, Teachers resources*.

Bale, Alan Clinton. 2011. Scales and comparison classes. *Natural Language Semantics* 19(2). 169–190.

Beavers, John & Andrew Koontz-Garboden. 2020. *The roots of verbal meaning*. Oxford: Oxford University Press.

Beck, Sigrid. 2011. Comparison constructions. In C. Maienborn, K. von Heusinger & P. Portner (eds.), *Semantics: an international handbook of natural language meaning*, vol. 2, 1341–1389. Berlin: De Gruyter Mouton.

Beck, Sigrid, Sveta Krasikova, Daniel Fleischer, Remus Gergel, Stefan Hofstetter, Christiane Savelsberg, John Vanderelst & Elisabeth Villalta. 2009. Crosslinguistic variation in comparison constructions. *Linguistic variation yearbook* 9(1). 1–66.

Beck, Sigrid, Toshiko Oda & Koji Sugisaki. 2004. Parametric variation in the semantics of comparison: Japanese vs. English. *Journal of East Asian Linguistics* 13(4). 289–344.

Bhatt, Rajesh & Roumyana Pancheva. 2004. Late merger of degree clauses. *Linguistic Inquiry* 35(1). 1–45.

Bierwisch, Manfred. 1989. The semantics of gradation. In *Dimensional adjectives*, vol. 71, 71–261. Berlin: Springer Verlag.

Bloomfield, Leonard. 1962. *The Menomini language*. New Haven: Yale University Press.

Bobaljik, Jonathan David. 2012. *Universals in comparative morphology: Suppletion, superlatives, and the structure of words*. Vol. 50. MIT Press.

Bochnak, M Ryan. 2013. The non-universal status of degrees: Evidence from Washo. In *Proceedings of North-East Linguistics Society*, vol. 42, 79–92.

Bochnak, M. Ryan & Elizabeth Bogal-Allbritten. 2015. Investigating gradable predicates, comparison, and degree constructions in underrepresented languages. In M. Ryan Bochnak & Lisa Matthewson (eds.), *Methodologies in semantic fieldwork*, 110–134. New York: Oxford University Press.

Bresnan, Joan W. 1973. Syntax of the comparative clause construction in English. *Linguistic inquiry* 4(3). 275–343.

Champollion, Lucas. 2015. The interaction of compositional semantics and event semantics. *Linguistics and Philosophy* 31.

Chomsky, Noam. 1965. Aspects of the theory of syntax.

Chomsky, Noam. 1977. On wh-movement. In Peter W. Culicover, Thomas Wasow & Adrian Akmajian (eds.), *Formal syntax*, 71–132. New York: Academic Press, Inc.

Cresswell, M.J. 1977. The semantics of degree. In Barbara Partee (ed.), *Montague grammar*, 261–292. New York: Academic Press.

Dryer, Matthew S. 2013. Order of subject, object and verb. In Matthew S. Dryer & Martin Haspelmath (eds.), *The world atlas of language structures online*. Leipzig: Max Planck Institute for Evolutionary Anthropology. `https://wals.info/chapter/81`.

Duffy, Quinn. 2007. The ASL perfect formed by preverbal finish. *Unpublished MA Project, Boston University, Boston, MA*.

Fischer, Susan D. 1974. *Sign language and linguistic universals*. Niemeyer.

Grano, Thomas & Chris Kennedy. 2012. Mandarin transitive comparatives and the grammar of measurement. *Journal of East Asian Linguistics* 21(3). 219–266.

Groce, Nora Ellen. 1985. *Everyone here spoke sign language: hereditary deafness on Martha's Vineyard*. Harvard University Press.

Heim, Irene. 1985. Notes on comparatives and related matters. *Unpublished ms., University of Texas, Austin*.

Heim, Irene. 2000. Degree operators and scope. In *Semantics and linguistic theory*, vol. 10, 40–64.

Heim, Irene & Angelika Kratzer. 1998. *Semantics in generative grammar*. Blackwell Oxford.

Hoeksema, Jack. 1983. Negative polarity and the comparative. *Natural Language & Linguistic Theory* 1(3). 403–434.

Hoffman, Johann. 1903. *Mundari grammar*. Calcutta: Bengal Secretariat Press.

Hrastinski, Iva & Ronnie B Wilbur. 2016. Academic achievement of deaf and hard-of-hearing students in an ASL/English bilingual program. *Journal of Deaf Studies and Deaf Education* 21(2). 156–170.

Ittmann, Johannes. 1939. *Grammatik des Duala*. Berlin: Reimer.

Kennedy, Christopher. 1997. *Projecting the adjective: the syntax and semantics of gradability and comparison*. Univ. Santa Cruz dissertation.

Kennedy, Christopher. 2001. Polar opposition and the ontology of 'degrees'. *Linguistics and philosophy* 24(1). 33–70.

Kennedy, Christopher. 2007. Modes of comparison. In *Proceedings from the annual meeting of the Chicago Linguistic Society*, vol. 43, 141–165.

Kennedy, Christopher. 2011. Vagueness and comparison. In *Vagueness and language use*, 73–97. Springer.

Kennedy, Christopher & Louise McNally. 2005. Scale structure, degree modification, and the semantics of gradable predicates. *Language* 81(2). 345–381.

Kentner, Ashley. 2014. *Event structure of resultatives in ASL*. Purdue University MA thesis.

Kentner, Ashley & Ronnie B Wilbur. 2018. Wh-clefts as evidence of resultatives in ASL. *Sign Language & Linguistics* 21(1). 77–114.

Kentner, Ashley, Sandra Wood & Ronnie B. Wilbur. 2020, June. Differentiating ASL MORE- and BEAT-constructions. In *Presentation at formal and experimental advances in sign language theory (FEAST)*. (Virtual poster presentation at FEAST 2020, Paris.)

Klein, Ewan. 1980. A semantics for positive and comparative adjectives. *Linguistics and philosophy* 4(1). 1–45.

Klima, Edward S & Ursula Bellugi. 1979. *The signs of language*. Harvard University Press.

Ladusaw, William A. 1980. Polarity sensitivity as inherent scope relations.

Lam, Charles Tsz-Kwan. 2014. A unified analysis to surpass comparative and experiential aspect. In *Proceedings of the 28th Pacific Asia Conference on Language, Information and Computing*, 368–377.

Lam, Charles Tsz-Kwan. 2015. *Understanding what verb phrases and adjective phrases have in common: evidence from Mandarin alternations*.

Lane, H. 1984. When the mind hears: a history of the deaf. *New York, Random House*.

Larson, Richard K. 2010. *Grammar as science*. Mit Press.

LaScotte, Darren K. 2016. Singular they: an empirical study of generic pronoun use. *American Speech* 91(1). 62–80.

Lau, Helena Yan Ping & Sophia Yat Mei Lee. 2015. A comparative study on Mandarin and Cantonese resultative verb compounds. In *Proceedings of the 29th pacific asia conference on language, information and computation*, 231–239.

Lechner, Winfried. 2004. *Ellipsis in comparatives*. eng (Studies in generative grammar ; 72). Berlin ; New York: M. de Gruyter.

Liddell, Scott K. 1980. *American Sign Language syntax*. The Hague: Mouton De Gruyter.

Lillo-Martin, Diane. 1986. Two kinds of null arguments in American Sign Language. *Natural Language & Linguistic Theory* 4(4). 415–444.

Loos, Cornelia. 2016. *The expression of complex cause-effect events in American Sign Language*. Paper presented at TISLR 12, Melbourne, Australia.

Loos, Cornelia. 2017. *The syntax and semantics of resultative constructions in Deutsche Gebärdensprache (DGS) and American Sign Language (ASL)*. The University of Texas at Austin dissertation.

Loos, Cornelia. 2018. Detecting clauses and their dependencies in signed utterances: a syntactico-semantic approach. *Glossa: a journal of general linguistics* 3(1).

Lucas, Ceil. 2001. *The sociolinguistics of sign languages*. Cambridge University Press.

Lucas, Ceil, Robert Bayley, Ruth Reed & Alyssa Wulf. 2001. Lexical variation in african american and white signing. *American Speech* 76(4). 339–360.

Lucas, Ceil, Robert Bayley & Clayton Valli. 2003. *What's your sign for pizza?: an introduction to variation in American Sign Language*. Gallaudet University Press.

Lupton, Linda K & Joe Salmons. 1996. A re-analysis of the creole status of American Sign Language. *Sign Language Studies* 90(1). 80–94. `https://muse.jhu.edu/article/506908`.

MacLaughlin, Dawn. 1997. *The structure of determiner phrases: evidence from American Sign Language*. Boston University dissertation.

Mitchell, Ross E & Michaela Karchmer. 2004. Chasing the mythical ten percent: parental hearing status of deaf and hard of hearing students in the United States. *Sign language studies* 4(2). 138–163.

Mok, Sui-Sang. 1998. *Cantonese exceed comparatives*. University of California, San Diego.

Morzycki, Marcin. 2007. Differential degrees and cross-categorial measure-phrase modification. *Ms., Michigan State University*.

Morzycki, Marcin. 2012. Adjectival extremeness: degree modification and contextually restricted scales. *Natural Language & Linguistic Theory* 30(2). 567–609.

Morzycki, Marcin. 2015. *Modification*. Cambridge University Press.

Neidle, Carol Jan, Judy Kegl, Benjamin Bahan, Dawn MacLaughlin & Robert G Lee. 2000. *The syntax of American Sign Language: functional categories and hierarchical structure*. MIT press.

Padden, Carol. 1983. *Interaction of morphology and syntax in American Sign Language*. University of California, San Diego dissertation.

Padden, Carol. 1988. *Interaction of morphology and syntax in American Sign Language*. Garland New York.

Petronio, Karen. 1993. *Clause structure in American Sign Language*. University of Washington dissertation.

Petronio, Karen. 1995. Bare noun phrases, verbs and quantification in ASL. In *Quantification in natural languages*, 603–618. Springer.

Petronio, Karen & Diane Lillo-Martin. 1997. Wh-movement and the position of spec-cp: evidence from American Sign Language. *Language*. 18–57.

Quer, Josep & Markus Steinbach. 2015. Ambiguities in sign languages. *The Linguistic Review* 32(1). 143–165.

Radford, Andrew. 2004. *Minimalist syntax: exploring the structure of English*. Cambridge University Press.

Roberts, John R. 1987. *Amele* (Croom Helm Descriptive Grammar Series). London: Croom Helm.

van Rooij, Robert et al. 2008. Comparatives and quantifiers. *Empirical issues in syntax and semantics* 7. 423–444.

Sager, Nancy Grosz. 2019. *Exploring the attitudes and beliefs of audiology students towards people who are deaf or hard of hearing*. University of the Pacific dissertation.

Sapir, Edward. 1944. Grading, a study in semantics. *Philosophy of science* 11(2). 93–116.

Sassoon, Galit Weidman. 2010. A typology of multidimensional predicates. *Ms., ILLC, University of Amsterdam, Amsterdam, The Netherlands*.

Sassoon, Galit Weidman. 2017. Comparisons of nominal degrees. *Language* 93(1). 153–188.

Sawada, Osamu. 2007. Pragmatic aspects of implicit comparison. In *81st annual meeting of the Linguistic Society of America*, vol. 6. Anaheim, CA. January.

Schlenker, Philippe. 2017. Super monsters ii: role shift, iconicity and quotation in sign language. *Semantics and pragmatics* 10(12). 1–67.

Schwarzchild, Roger & Karina Wilkinson. 2002. Quantifiers in comparatives: a semantics of degree based on intervals. *Natural language semantics* 10(1). 1–41.

Schwarzschild, Roger. 2005. Measure phrases as modifiers of adjectives. *Recherches linguistiques de Vincennes* (34). 207–228.

Scontras, Gregory, Maria Polinsky, C-Y Edwin Tsai & Kenneth Mai. 2017. Cross-linguistic scope ambiguity: when two systems meet. *Glossa: A journal of general linguistics* 2(1). 1–28.

Seuren, Pieter AM. 1978. The structure and selection of positive and negative gradable adjectives. *Papers from the Parasession on the Lexicon, CLS* 14. 336–346.

Shaffer, Barbara. 2004. Information ordering and speaker subjectivity: modality in ASL. *Cognitive Linguistics*.

Shaw, Emily & Yves Delaporte. 2011. New perspectives on the history of American Sign Language. English. *Sign Language Studies* 11(2). Copyright - Copyright American Annals of the Deaf Winter 2011; Document feature - Illustrations; ; Last updated - 2019-11-23; SubjectsTermNotLitGenreText - United States–US,

158–204, 290–291. https://search.proquest.com/docview/853757391?accountid=13360.

Shepard-Kegl, Judy Anne. 1985. *Locative relations in American Sign Language word formation, syntax and discourse*. Massachusetts Institute of Technology dissertation.

Shroyer, Edgar H & Susan P Shroyer. 1984. *Signs across America: a look at regional differences in American Sign Language*. Gallaudet University Press.

Siemund, Peter. 2000. *Intensifiers in English and German: a comparison*. Vol. 6. Psychology Press.

Solt, Stephanie. 2018. Multidimensionality, subjectivity and scales: experimental evidence. In *The semantics of gradability, vagueness, and scale structure*, 59–91. Springer.

Stassen, Leon. 1985. *Comparison and universal grammar*. Oxford: Basil Blackwell.

Stassen, Leon. 2013. Comparative constructions. In Matthew S. Dryer & Martin Haspelmath (eds.), *The world atlas of language structures online*. Leipzig: Max Planck Institute for Evolutionary Anthropology. http://wals.info/chapter/121.

Stechow, Arnim von. 1984. Comparing semantic theories of comparison. *Journal of semantics* 3(1-2). 1–77.

Stratton, James M. 2020. A diachronic analysis of the adjective intensifier well from Early Modern English to Present Day English. *Canadian Journal of Linguistics/Revue canadienne de linguistique* 65(2). 216–245.

Supalla, Ted & P. Clark. 2014. *Sign language archaeology: understanding the historical roots of American Sign Language*. 1–270.

Supalla, Ted & Liza Newport. 1978. How many seats in a chair? The derivation of nouns and verbs in American Sign Language. In. *Understanding Language Through Sign Language Research*. I. P. Siple (ed.). New York, Amsterdam: Academic Press.

Talmy, Leonard. 1975. Semantics and syntax of motion. *Syntax and semantics* 4(181-238).

Talmy, Leonard. 2000. *Toward a cognitive semantics, vol. 1: Concept structuring systems*. The MIT Press.

Traugott, Elizabeth Closs. 2008. Grammaticalization, constructions and the incremental development of language: suggestions from the development of degree modifiers in English. *Trends in Linguistics Studies and Monographs* 197. 219.

Ueyama, Ayumi. 1998. Are clausal comparatives in Japanese really 'clausal'. In *Comparative workshop on Japanese, Chinese, Korean and English*. Fukuoka National University, Fukuoka, Japan.

Ultan, Russell. 1972. Some features of basic comparative constructions. working papers on language universals, no. 9.

Vicars, Bill. 2012. *American Sign Language: "worse" or "worst"*. `https://www.lifeprint.com/asl101/pages-signs/w/worse.htm` (20 April, 2020).

Wilbur, Ronnie. 1996. Evidence for the function and structure of wh-clefts in American Sign Language. *International review of sign linguistics* 22. 209–256.

Wilbur, Ronnie B., Natasha Abner, Sandra Wood & Helen Koulidobrova. 2018. When BEAT is 'exceed': verbal comparison in American Sign Language. *FEAST* 1. 59–69.

Wilcox, Sherman & Barbara Shaffer. 2006. Modality in American Sign Language. *The expression of modality*. 207–237.

Wood, Sandra. 1999. Semantic and syntactic aspects of negation in ASL. *MA thesis. West Lafayette, IN: Purdue University*.

Woodward, James. 1978. *Historical bases of American Sign Language. Understanding language through sign language research, ed. by Patricia Siple, 333-348*.

Woodward, James C. 1976. Black southern signing 1, 2, 3. *Language in Society* 5(2). 211–218.