Revisiting gradability in American Sign Language (ASL)

Abstract: This paper addresses gradability in American Sign Language (ASL). The literature has argued that languages may or may not introduce degree variables, i.e., there is cross-linguistic variation with regard to whether languages should be analyzed as degree or degreeless languages (Beck et al., 2004). In particular, it has been proposed that ASL should be analyzed as a degree language (Kentner, 2020). In contrast, we argue that ASL is a degreeless language. Our discussion is based on a comprehensive examination of adjectives across different constructions (e.g., different comparison strategies, differential comparatives, questions targeting degrees, crisp judgments, etc.). We offer two types of evidence, which come from two different methodological choices: (i) elicitation and playback data with 4 consultants with different profiles across a variety of predicates and constructions; (ii) the SLAASH corpus (Lillo-Martin & Chen Pichler, 2008), totaling over 200 hours of spontaneous production of four different Deaf children (ages 1;06-4;09), and their adult caregivers or experimenters in ASL. Our approach further means that Aristodemo & Geraci's (2018) claim that sign languages may directly represent degrees due to the visual nature associated with signing does not find support in ASL.

Keywords: adjectives, gradability, comparatives, degree constructions, ASL

1. Introduction

A common assumption made in the literature when discussing gradable predicates in general and gradable adjectives in sign languages in particular is that such predicates introduce a degree argument (see, e.g., Beck et al., 2004; Beck et al., 2009; Bochnak, 2015; Deal & Hohaus, 2019; Kapitonov, 2019 for an overview of the debate); the languages that have this kind of predicates count as so-called degree languages. For instance, Wilbur et al. (2012, 2018) and Kentner (2020) have argued that ASL gradable adjectives contain a degree variable; Aristodemo & Geraci (2018) have argued for the same position for Italian Sign Language (LIS). In the literature focusing on spoken languages (see, e.g., Kennedy & McNally, 2005; among many others), the presence of degrees is normally tied to accounting for a number of properties, such as the possibility of combining with expressions that provide some kind of measurement (i.e., a value for some degree). These expressions include, for instance, degree morphemes, such as the comparative morpheme *-er*, as in (1c), to use English for illustration. In the absence of overt degree morphology, a null degree morpheme *pos* is typically assumed, so that a relation between a degree and a (contextual) standard is established, as would be the case in (1a). A phrase indicating a measurement may also indicate the value of a degree, such as somebody's height, as in (1b).

(1) a. Alex is tall.
b. Alex is 185 cm tall.
c. Alex is taller than Emma.

As indicated, this approach has been applied to ASL (see Kentner, 2020 for recent discussion), in particular, to cases such as (2).

(2) ALEX a-IX TALL *(neutral-space*) JO b-IX TALL *(at-signer'-head)*
'Alex is this tall; Jo is this tall.' (≈ 'Jo is taller than Alex.')

In fact, it has been recently argued that the representation of degrees may actually be a natural option in sign languages, at least to some extent. Focusing on LIS, Aristodemo & Geraci (2018) build on the visual nature associated with signing and argue that some adjectives represent degree variables explicitly, cashing out on the fact that the difference between expressions such as TALL*(neutral-space*) and TALL*(at-signer'-head)* is visible, and, as such, would be directly represented. This would mean that ASL, just as LIS (or, in fact, any sign language), has, in principle, the potential of visually depicting scales. Thus, pursuing an analysis of ASL in the sense indicated above, i.e., in terms of degrees, would seem natural. In this regard, for instance, both Kentner and Aristodemo & Geraci extend this approach to analytic comparative morphemes, such as MORE and BEAT in ASL (for a recent discussion of the difference between the two, see Kentner et al., 2020).

In contrast, in this paper we argue that such an approach to ASL is actually misguided. We show that several properties in connection to expressions involving gradability in ASL follow (more) naturally from an approach where no degree variables are introduced in general. That is, we explicitly argue for an analysis of ASL as a degreeless language similar to Washo, Nez Perce, etc. (Bochnak, 2015; Deal & Hohaus, 2019; see also Beck et al., 2004; Beck et al., 2009; Kapitonov, 2019). Our discussion is based on a comprehensive examination of adjectives across different constructions that have been proposed in the literature to distinguish degree and degreeless languages (e.g., different comparison strategies, differential comparatives, questions targeting degrees, crisp judgments, etc.). We offer two types of evidence for our claim, which are based on two different methodological choices. On the one hand, we have used elicitation and playback with 4 consultants across a variety of predicates and constructions (see Matthewson, 2004; Davis et al., 2014; Bochnak & Matthewson, 2015). On the other hand, we examined the SLAAASH corpus (Lillo-Martin & Chen Pichler, 2008), totaling over 200 hours (over 30,000 utterances) of spontaneous production of four different Deaf children (ages 1;06-4;09), and their adult caregivers or experimenters in ASL. Importantly, our research shows that a degreeless approach to ASL seems more appropriate to capture the properties of gradability in this language.

This paper is organized as follows. Section 2 discusses the methodology used for this study, focusing mainly on the elicitation and playback processes. Section 3 provides a sketch of the degree analysis, highlighting some of the key properties of such an approach in connection to the predicates examined in ASL; the alternative degreless analysis is also introduced. Sections 4 and 5 discuss the different predicates and constructions on which our claims are based in more detail. Section 6 discusses our findings in this regard in the SLAAASH corpus. Section 7 concludes and discusses future directions.

2. Methodology

Two types of data collection methods were used for this paper: (i) elicitation and playback from 4 different language consultants, and (ii) a corpus (4 children, in addition to 2-3 adults each). The focus in this section is on the elicitation and playback component. We discuss the corpus data in section 6.

The elicitation stage consisted of three independent steps (3a-c), all of which were done virtually (via Zoom). The fourth step (3d) involved playback and the final judgment and was undertaken at a later stage; this step was also conducted via Zoom.

(3) *Elicitation and playback process*

a. The contextual scenario was introduced in ASL. The consultant was then asked to describe the situation using the target lexical items in conversation with another native signer. The conversation was videotaped.
b. Elicited sentences were checked for a variety of strategies in production.
c. The consultant's decision was followed by a lengthy discussion of potential alternatives.
d. The resulting data were subjected to an additional check (a discussion between Deaf or Coda consultants, with and without the presence of the hearing co-PIs) and followed by a playback of the signer's own production. The time lapse between sessions was close to a month. The playback session consisted of the collection of acceptability judgments and resulted in either discarding [wrong, I made a mistake here] or keeping [correct] the relevant sentence.

Our two primary consultants are a Deaf of Sibling (DoS) and a Deaf of Hearing (DoH). The DoH consultant was identified neonatally (1 w.o.), was exposed to ASL early (9 ms.o.), and received all of their schooling in ASL. This profile allows us to confidently assume that both consultants have native judgements in ASL (Enns et al. 2021). Both of these individuals hold positions as professors in ASL, Linguistics, or Deaf-Studies related fields in research institutions in the US and have decades of experience in ASL teacher training and in creating language assessments; they are also co-authors of this paper. The other two language consultants are hearing children of Deaf adults (Codas); both hold advanced degrees in linguistics, have decades of experience in sign language assessment creation, interpreting and interpreter training. All four individuals currently reside in the Eastern part of the US (from upstate New York to the District of Columbia), but acquired ASL in other states. Two are men (one hearing, one deaf); two are women (one hearing, one deaf). This information shows that (i) every datapoint that is discussed in what follows has received multiple opportunities for a variety of treatments by different signers, and (ii) the observations made in this paper represent a variety of language users, deaf and hearing, all with advanced levels of proficiency in English and ASL; importantly, ASL is the native language of every consultant.

Following conventions in sign language linguistics, all ASL glosses appear in CAPs. The line above the utterance indicates the spread of a non-manual marking (such as eye-brow raise) associated with either role-shifted material, topicalization, or a question (a *wh*- or a *yes*-/*no*-question). For non-manuals in particular, we use descriptive terms such as 'brow-raise' (br), '-furrow', 'puffed cheeks', etc., when needed (this is done in an attempt to avoid assigning a particular view or analysis to these elements). The letter or number separated with a dash (e.g., a-) indicates the area of the signing space dedicated to a particular referent and, thus, the locus of a shift (e.g., '1' indicates the first person, i.e., the signer). Subindices such as i, j, k indicate correference. The addition of '+' indicates the production of the sign multiple times, sometimes in the same area (e.g., '+++') or along a particular trajectory, with or without punctuated movement ('>+>+' and '>>>'); this a convention that is employed elsewhere in the literature (see, e.g., Pfau & Steinbach, 2006; Schlenker & Lamberton, 2019)**.**

3. Approaches to gradability

As indicated, the literature distinguishes two approaches to gradability (see Hohaus & Bochnak, 2020 for an overview), namely, (i) one in which gradability is understood in connection to the

presence of degree variables, i.e., a degree approach (see Cresswell, 1976; Kennedy & McNally, 2005; Klein, 1991; Martínez Vera, 2021; Pedersen, 2015) and (ii) another one in which gradability does not make reference to such objects, i.e., a degreeless approach (see Beck et al., 2009; Bochnak, 2015; Burnett, 2014; Deal & Hohaus, 2019; Kamp, 1975; Kapitonov, 2019; Klein, 1980, 1991; van Rooij, 2011). The purpose of this section is to provide a general grasp of these two approaches in a rather general manner that is explicit enough but makes some simplifications for ease of exposition, since the goal is to introduce the general debate. English is used throughout the discussion for illustration.

Under the degree approach, gradable predicates can be characterized in terms of scales *S*, which are sets of linearly ordered degrees *d* along some dimension associated with a base predicate. In this approach, gradable predicates introduce a degree variable, and degree markers determine how the degree in the denotation of the gradable predicate relates to some other degree, which may be contextual, may arise via a(n explicit) comparative expression, may be understood in connection to a phrase indicating a measurement (i.e., such a phrase indicates what the specific value of the degree under consideration is), etc. For concreteness, the semantics of a predicate such as *tall* may be represented as in (4), by means of which the degree of height of some individual is captured.

(4) $[\![\textbf{tall}]\!] = \lambda d \lambda x[x \text{ is } d\text{-tall}]$

Predicates such as *tall* combine with degree markers, such as degree morphemes (measure phrases may also occupy this slot as well). For instance, a possible denotation for the covert degree morpheme *pos*, which combines with adjectives, such as the one in (4), appears in (5a). Such a morpheme relates the degree in the denotation of the adjective to the standard of comparison, which is the minimum degree that is required to stand out in context. For illustration, the denotation of *Mary is tall* appears in (5b). (5b) is true iff Mary's height equals or is greater to the degree represented by the standard, i.e., the degree of height that indicates what counts as tall (in a given context).

(5) a. $[\![\textbf{pos}]\!] = \lambda P_{\langle d,et\rangle} \lambda x \exists d[P(x)(d) \ \& \ d \geq stnd(P)]$
b. $[\![\textbf{Mary is pos-tall}]\!] = 1$ iff $\exists \ d[\text{Mary is } d\text{-tall} \ \& \ d \geq stnd(tall)]$

The comparative morphemes *-er* (and *more*) also make use of degrees. For concreteness, a possible denotation for *-er* appears in (6a) (syntactic details, as well as a full-fledged semantics are set aside here for simplicity, since the key lies in illustrating the general picture of what it means to allow for degree variables). (6a) compares two degrees in the same scale such that one of them is greater than the other. For illustration, the denotation of *Mary is taller than Sue* appears in (6b). (6b) is true iff Mary's height exceeds Sue's height.[1]

(6) a. $[\![\textbf{-er}]\!] = \lambda P_{\langle d,et\rangle} \lambda y \lambda x \exists d, d'[P(x)(d) \ \& \ P(y)(d') \ \& \ d > d']$
b. $[\![\textbf{Mary is taller than Sue}]\!] = 1$ iff $\exists \ d, d'[\text{Mary is } d\text{-tall} \ \& \ \text{Sue is } d'\text{-tall} \ \& \ d > d']$

[1] An alternative view for the comparative consists of including a differential degree in its denotation, i.e., the degree representing the difference between the two degrees involved in the comparison (see, e.g., Kennedy & Levin, 2008). There are proposals where a differential measure function is added on top in an approach such as the one in (6) (see, e.g., Pedersen, 2015); a proposal along these lines would need to be adopted to incorporate expressions indicating a measurement (e.g., *2 cms*) in the cases under discussion.

In contrast, in a degreeless approach, gradable base predicates are characterized in terms of individuals that have some property relative to a context. In Klein's (1980) approach, this involves a partitioning of the domain of individuals into three sets, namely, the set of individuals that have some property (i.e., they are in the positive extension of some predicate), the set of individuals that do not have the relevant property (i.e., they are in the negative extension of that predicate), and the set of individuals that cannot be categorized within one set or the other (this is an extension gap). The denotations of gradable predicates can be represented as in (7a) (see Bochnak, 2015), where some individual counts as tall when they belong to the positive extension of this predicate in context; in this case, there is no slot for degree morphology (or measure phrases) in the sense indicated above. (7b) exemplifies the sentence *Mary is tall* in this approach: Mary belongs to the positive extension of the predicate in context.

(7) a. $[\![\textbf{tall}]\!]^c = \lambda x[x$ counts as tall with respect to $c]$
b. $[\![\textbf{Mary is tall}]\!]^c = 1$ iff Mary counts as tall with respect to c

In this approach, it is also possible to capture nuanced comparisons by means of comparative morphology. For instance, a(n overt) morpheme such as *-er* (or *more*) is understood in terms of individuals belonging or not to the positive extension of some predicate relative to some context.[2] For illustration, the denotation of *Mary is taller than Sue* appears in (8b): (8b) is true iff, relative to some context, Sue does not count as tall, but Mary does.[3]

(8) a. $[\![\textbf{-er}]\!]^c = \lambda P_{\langle k,et\rangle}\lambda y\lambda x \exists c'[P(x)(c') = 1 \ \& \ P(y)(c') = 0]$
b. $[\![\textbf{Mary is taller than Sue}]\!]^c = 1$ iff $\exists c'$ [Mary counts as tall with respect to c' & Sue does not count as tall with respect to c']

As can be seen, these two approaches can capture similar pieces of data, such as the ones discussed above (i.e., adjectives in positive and comparative constructions), for a language such as English. As is well-known, however, there are many more expressions and tests that are discussed in connection to gradability, such as implicit comparatives, measure phrases (including differential ones), degree questions, crisp judgments, etc. (see, e.g., Beck et al., 2009; Bochnak, 2015; Bowler, 2016; Deal & Hohaus, 2019; Kapitonov, 2019; Kennedy, 2007). Key in this regard is what approach makes appropriate predictions to capture clusters of properties in a given language (see Bochnak, 2015; Deal & Hohaus, 2019; Kapitonov, 2019 for discussion with regard to the issue of having both approaches to account for different cross-linguistic matters). This task is undertaken in the following sections in connection to ASL.

[2] We assume that adjectives are of type *et*; we also assume Monstrous Function Application, so that a context variable of type *k* is introduced (see Anand, 2006; Deal, 2020; Deal & Hohaus, 2019; Klein, 1980; see Burnett, 2014; Deal & Hohaus, 2019; Klein, 1980 for additional issues and potential problems that arise under this view). As indicated above, a simplified approach is adopted here.

[3] See van Rooij (2011) for discussion of phrases involving a measurement in a degreeless approach. The view adopted in this paper follows Bochnak (2015) and Deal & Hohaus (2019), where the focus lies in capturing clusters of properties in the most economical way; for instance, the impossibility of combining a measure phrase with some gradable expression is readily captured in a degreeless approach, because there is no degree variable whose value would correspond with the measurement indicated. See Bochnak (2015) for discussion of van Rooij's (2011) analysis in particular within an approach that attempts to capture cross-linguistic variation.

4. Revisiting and expanding on gradable expressions in ASL

In this section, we take a closer look at different expressions and diagnostics that involve gradability in ASL focusing on the elicitation and playback data. Our purpose is to provide a comprehensive survey in this regard building on both the previous literature on the topic in ASL in particular and the previous literature on spoken languages where the issue of gradability has been explicitly addressed.

Our starting point is the consideration of a large and diverse number of gradable predicates in ASL. We have collected data from the 30 predicates indicated in (9).[4] Such a list expands on the one included in Kenter (2020), which has 12 predicates. The predicates in (9) represent a wide variety from the point of view of both semantics and phonology. They can be characterized (i) in scalar terms with regard to the potential presence or absence of absolute endpoints (e.g., (9a) vs. (9e) vs. (9j)); in iconic terms, in that some may be more readily depictable than others (e.g., (9n) vs. (9l); in terms of concreteness (e.g., (9o) vs. (9m)) (Montefinese, 2019); in terms of their locus or potential anaphoric retrieval (e.g., (9a) vs. (9f)) (Aristodemo & Geraci, 2018); and in terms of being symmetrically two-handed or not, which may create a phonological constraint on the production of the predicate (e.g. (9l)) (van der Hulst & van der Kooi, 2021).[5]

(9)

a. TALL/SHORT	b. WIDE/NARROW	c. HOT/COLD
d. PRETTY/UGLY	e. STRAIGHT/CURLY	f. SMART/STUPID
g. FAST/SLOW	h. DRY/WET	i. OLD/YOUNG
j. CLOSED/OPEN	k. FULL/EMPTY	l. LAZY/ACTIVE
m. CLEAN/DIRTY	n. HEAVY/LIGHT	o. DARK/CLEAR

Below we introduce the baseline cases, illustrating some of the predicates from (9): (10a) contains OLD (in (9i)); (10b) contains HEAVY (in (9n)); and (10c) contains TALL, SMART, and FAST (in (9a), (9f) and (9g) respectively).

(10) a. 1-POSS GREAT-GRANDMOTHER OLD MAYBE 100 NOW

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[4] In general, these predicates are conceived of as adjectives. It is worth noting that, as is the case for many languages (see, e.g., Hanink et al., 2019; Menon & Pancheva, 2014 et seq.), the definition for adjectives in ASL has not always been straightforward. Researchers have employed morphosyntactic but also semantic diagnostics, such as gradability, property, etc. to tell adjectives apart (see Loos 2014; see also Bernath, 2010; MacLaughlin, 1997; Padden, 1988; we refer the reader to these works for extensive discussion of different adjective types in ASL). In this paper, we use the expressions gradable predicate and adjective interchangeably to refer to the items in (9).

[5] While it is not our main focus, we further tested colors to add to our comprehensive study. Such an examination was undertaken for three reasons. First, they may be characterized as including or not including absolute endpoints, e.g., *black* vs. *green* (it has been further proposed that the standard is located in the middle of the scale in the case of colors). However, cross-linguistically, the literature remains limited (Menon & Pancheva, 2019). Second, colors have been used as a diagnostic for the adjectival category in various languages, ASL included (Bernath, 2010; McLaughlin, 1997; Padden, 1988). Third, color terms have a particularly uniform phonological import in ASL: most are typically uttered in the neutral spaces and are loan-initialized in that they may be described as having adopted the handshape of the letter they begin with in English, such as R for RED, P for PURPLE, etc. Finally, some, though not all, vary in location, for instance, cases such as (ib), but not (ia) or (ic), are mobile in space and, therefore, are in principle locatable along the vertical space. Importantly, while we do not discuss colors explicitly in this paper, across the entirety of the paradigm, colors behave on par with the gradable predicates such as those in (9).

(i) a. BLACK
b. GREEN/PURPLE
c. RED

‘My great-grandmother is old. Maybe 100 now.’
_____br

b. 1-POSS KID HEAVY PICK-UP CAN’T
‘My kid is heavy. I can’t pick him up any more’

c. REMEMBER KID BABY CRY++ CONFUSE+++ NOW TALL SMART FAST
‘I remember this kid as a baby. Cried all the time. Confused a lot. Now she is tall, smart, fast!’

In addition, a variety of nouns were used for the cases involving elicitation and playback. This is exemplified in (11): e.g., OUTSIDE and LIQUID in (11a), ROAD and ANGLE in (11b), KID and MARY in (11c), and JOE and PAUL in (11d). As these examples illustrate, different types of nominal expressions can be combined with gradable predicates in ASL, e.g., mass and count, singular and plural.

(11) a. OUTSIDE / LIQUID HOT
‘The weather/liquid is hot.’

b. ROAD / ANGLE INCREASE: WIDE
‘The road/angle was widened.’
_____br

c. KID / MARY WOW NERVE SEE COOKIE GRAB EAT-UP FAST
‘The kid/Mary has the nerve! Saw a cookie, grabbed it and gobbled it up. Fast’

d. JOE disj PAUL BOTH LAZY
‘Joe and Paul are both lazy’

In what follows, we discuss the diagnostics that have been reported in the literature which probe for the presence or absence of degrees (Beck et al., 2004; Beck et al., 2009; Bochnak, 2015; Bowler, 2016; Deal & Hohaus, 2019; Kapitonov, 2019). In this section, we address cases building on the positive sentences, such as those in (10). Specifically, section 4.1 discusses degree questions and section 4.2 addresses phrases indicating a measurement. In section 5, we turn to the diagnostics in connection to the different comparative strategies that ASL displays.

4.1 Degree questions

The first diagnostic that we consider regards the possibility of allowing for degree questions more generally. Typically, languages for which it is proposed that degree variables are introduced allow for questions that target a degree value (here we assume, for concreteness, that, in such languages, the *wh*-operator binds the degree variable within the gradable predicate). This results in a possibility of questions such as (12), which may be answered by indicating a particular value of Sue’s height. In a language without a degree variable in the adjective, this possibility is absent.

(12) How tall is Sue?

As is well-known, ASL allows a variety of positions for its *wh*-elements: *wh*-in situ, D-linked *wh*-elements, *wh*-elements in initial position, *wh*-elements in final position, and *wh*-elements entirely omitted (see Kelepir, 2021; Sandler & Lillo-Martin, 2006 for overviews in this regard). Many ASL signers, however, tend to prefer *wh*-words in final position, at least in mono-clausal

cases (Sandler & Lillo-Martin, 2006).[6] Additionally, non-manual markings (namely, brow lowering) are observed. Examples of *what* and *how* questions in ASL appear below.

(13) a. _____bf
MARY DRINK WHAT
'What did Mary drink?'

b. _____bf
MAKE HOW
'How is this made?'

While a variety of configurations were attempted during the elicitation stage (Loos, 2018), here we report *wh*-final cases for illustration, which, as indicated, constitute the more general strategy in question formation that is used in ASL and come with an existential presupposition (Abner, 2011). Succinctly put, degree questions with an adjective and the relevant *wh*-word do not arise.

As can be seen in the examples that follow in (14)-(19), across a variety of predicates, a content question may be asked of a noun property (as in most of the (b) cases), but, crucially, not of the relevant adjectival counterpart (as in all the (a) cases). Let us focus on (16b) and (18b). These questions do not contain a *wh*-element; other cues play a key role. In the case of (18b), this is the conventional way of asking for someone's age: in the absence of a *wh*-word, this string is understood as a *how* question.[7] This contrasts with the similar string in (16b): such a conventional use to talk about someone's intelligence does not arise, and, in the absence of a *wh*-word, this string is to be understood as a *yes*/*no* question.

(14) _____bf
a. *a-IX BOOK HEAVY WHAT / HOW
'How heavy is this book?'

_____bf
b. a-IX BOOK WEIGHT WHAT / HOW?
'What is the weight of this book?

(15) _____bf
a. *ANGLE WIDE WHAT / HOW?
'How wide is this angle?'

_____bf
b. ANGLE MEASURE WHAT?
'What is the measure of this angle?'

(16) _____br/bf
a. *KID SMART WHAT / HOW
'How smart is this child?'

[6] The reason for such a preference may be due to the presence of focus structures or split-headedness in certain phrases (Lillo-Martin, 2006; Quer et al., 2021). While this issue has seen some debate in the literature, we set it aside, as it is orthogonal to the topic under consideration.

[7] The predicate OLD can be potentially interpreted as the noun AGE, as can be seen here: https://aslsignbank.haskins.yale.edu/dictionary/gloss/153.html. Thus, (18b) yields an interpretation along the lines of *What is your mother's age?*; importantly, in this scenario as well, the *wh*-item is missing.

_____br
b. KID SMART WIGGLE
'Is this kid smart?'

(17) _____bf
a. *2-POSS CHILDREN TALL WHAT / HOW
'How tall are your children'
_____bf
b. 2-POSS CHILDREN HEIGHT WHAT
Lit. 'What is your children's height?

(18) _____bf
a. *2-POSS MOTHER OLD WHAT / HOW
'How old is your mother?'
_____bf
b. 2-POSS MOTHER OLD
'How old is your mother?'

(19) _____bf
a. *LIQUID a-IX HOT WHAT / HOW
'How hot is this liquid?'
_____bf
b. LIQUID a-IX TEMPERATURE WHAT
Lit. 'What is the temperature of this liquid?'

Nonetheless, irrespective of whether a *wh*-word may appear (as in (14), (15), (17) and (19)) or not (as in (16) and (18)), whether a so-called *wh*-question interpretation arises (via contextual cues) (18) or not (16), one thing remains constant in our data: it is not possible to ask a *how* question with the relevant *wh*-element even though these are rather common questions to ask in everyday life in a language that allows them. While this is not surprising on a degreeless approach, this finding poses a problem for the alternative view where degree variables may, in principle, be targeted. Interestingly, sentences with TALL and OLD are commonly found in the literature on ASL where the degree analysis is adopted (e.g. Wilbur et al. 2018; Kentner 2020, i.a.). The data presented here suggest, in contrast, that a degreeless analysis may in fact be more appropriate.

4.2 Phrases involving a measurement

Another test that is usually taken as evidence for the potential presence of degree variables associated to gradable predicates in a language regards the availability of phrases indicating a measurement in a sentence with a gradable predicate. This can be illustrated by means of English sentences such as the one in (20), where the measurement *1.8 m* indicates the value corresponding to Mario's height. Under a degree approach, such a phrase provides a specific value to the degree representing this individual's height. In the absence of such a degree, adjoining such a phrase in the environment under consideration would not be possible, since there is no degree slot available for the relevant phrase to be inserted. What this means for current purposes is that the absence of phrases indicating a measurement can be accommodated

under a degreless approach, as there is no slot for degree expressions combining with an adjective. This is precisely what is tested below.

(20) Mario is 1.8 m tall.

It is worth pointing out that not all languages or even all adjectives in the same language allow measure phrases, even if the adjective itself appears to be compatible with such a phrase. Previous research, mainly focusing on so-called degree languages, has appealed to the neutral vs. non-neutral interpretation of the adjective (21), as well as certain syntactic facts, such as the possibility of *for N* insertion, as well as attributive vs. predicative adjective modification (22) (see, e.g., Doetjes, 2012; Heim 2007; among others).[8]

(21) a. John is 1.50 m tall.
b. #John is 1.50 short.
c. #The locket is 250€ expensive.
d. #The locket is 250€ cheap. (Doetjes 2012: 197)

(22) a. [M]het 20 cm ondiepe water
the 20 cm shallow water
b. #Het water is 20 centimeter ondiep
'the water is 20 centimeters shallow' (Doetjes 2012: 201)

In (23)-(28), we observe that in ASL, it is impossible to combine a gradable predicate with a phrase indicating a measurement. The (a) examples illustrate the case where an expression indicating a measurement is possible, i.e., more generally, such expressions may surface in the language. However, the (b)-(b') cases and (c)-(c') cases show that it is ungrammatical to include such a phrase as a modifier to the gradable adjective under consideration. Note as well that the ASL adjectives are not sensitive to the distinctions made in degree languages as in (21)-(22) – i.e., all ASL predicates under consideration display uniform behavior. Thus, it is impossible to combine phrases indicating a measurement with an adjective, irrespective of whether the adjective is neutral (TALL, WIDE) or non-neutral (HEAVY, SMART, HOT), or whether the phrase indicating a measurement is found in attributive or predicative structures (i.e., (b)-(b') vs. (c)-(c') cases). As in the case of degree questions, then, these data can be accommodated under a degreless approach, where there is no room for combining expressions targeting a particular value.

(23)
a. _____br
BOOK a-IX 4 KILO. TRUE HEAVY
'The book is 4 kilos. It is really heavy.'
b. _____br
*BOOK a-IX 4 KILO HEAVY
'The book is 4 kilo heavy.'

[8] There has been several proposals to account for these facts; see, e.g., Schwarzschild's (2005) Homonym Rule or Winter's (2005) Triviality Filter (see also Barker, 2002; Svenonius & Kennedy, 2006; Doetjes, 2012; among others).

(_____br)
c. *IX 4 KILO HEAVY BOOK NOT 1-POSS
'That 4 kilo heavy book—not mine.'

(24) _____br
a. ROAD a-IX 30 FT. TRUE WIDE
'This road is 30 ft. It is really wide.'
_____br
b. *ROAD a-IX 30 FT WIDE
'This road is 30 ft wide.'
(_____br)
c. *IX 30 FT WIDE ROAD NEW
'That 30 ft wide road is new'

(25) ____br
a. KID SMART. 100 PERCENT. RIDICULOUS GENIUS
' The kid is 100% smart. Real genius.'
___br
b. *KID 100 PERCENT SMART
'The kid is 100% smart.'
(_____br)
c. * IX 100 PERCENT SMART KID RIDICULOUS GENIUS
'That 100% smart kid is real genius'

(26) _____br
a. LEGO PERSON 4 CM
'The lego person is 4 cm.'
_____br
b. *LEGO PERSON 4 CM TALL / SHORT
'The lego person is 4 cm tall/short.'
(_____br)
c. * IX 4 CM TALL/SHORT LEGO PERSON FUNNY
'That 4cm tall/short person is funny (-looking)'

(27) _____br ____br
a. 1-POSS MOTHER OLD[9] 90
Lit.'As for my mother, and her being old, she is 90.'

[9] There is a different lexical item, which we gloss here as OLD2, and which behaves identically to the one in the main text. An example appears in (i):

_____br
(i) HOUSE BUILD YEAR 1931. WALL+ 90 YEAR (*OLD2) ROOF 90 YEAR (*OLD2) COLLAPSE. WINDOW NEW MAYBE 2-3 YEAR (*OLD2). WEIRD
'There is this house. It was built in 1931. The walls are 90 years old; the roof is 90 years old and has collapsed. But the windows are like 2-3 years old. So weird.'

_____br
b. *1-POSS MOTHER 90 YEAR OLD[10]
Lit. 'As for my mother, she is 90 years old'
(_____br)
c. *1-POSS 90 YEAR OLD MOTHER SICK
'My 90-year old mother is sick'

(28) _____br
a. LIQUID a-IX HOT. 100 DEG C IMPOSSIBLE
'This liquid is hot! But it can't be 100°.'
_____br
b. *LIQUID a-IX BOIL {100 DEG HOT / HOT 100 DEG} IMPOSSIBLE
'This liquid is bubbling. But it can't be 100° hot.'
_____br
b'. OUTSIDE SUN 1-IX SWEAT. 70 DEG (*HOT) IMPOSSIBLE
'It's sunny out, I am sweating profusely. It can't be 70°!'
(_____br)
c. *IX 100 DEG HOT / HOT 100 DEG LIQUID BOIL IMPOSSIBLE
'That this 100° hot liquid would boil is not possible'
(_____br)
c'. OUTSIDE SUN 70 DEG (*HOT) DAY 1-IX SWEAT
'It's sunny out. On a 70 degree hot day, I am sweating!'

5. Comparison strategies

The discussion in the previous sections suggests that there is no need to assume that a degree approach is appropriate to analyze gradable predicates in ASL; on the contrary, the diagnostics articulated thus far have stacked towards a degreeless approach. In this section, we turn to another set of diagnostics that has been utilized in the literature to argue for the presence or absence of degree variables in the relevant sense. In what follows, the focus is on comparative constructions. Comparative constructions are relevant to the discussion of presence or absence of degrees, since, as discussed in section 3, comparative morphemes may bring degrees to the foreground in that two values are taken into consideration. The absence of such markers when establishing comparisons begs the question as to how such constructions are to be analyzed.

As documented in the previous literature (see, e.g., Kentner, 2020 for a recent overview), ASL allows various strategies for comparison: a gradable predicate may appear in a construction that includes (i) no overt marking at all, in which case a comparative interpretation arises via cues in the discourse (this is a juxtaposition strategy), as in (29); (ii) the comparative depiction of the two entities under consideration, as in (30), which repeats (2) (according to our consultants, (29)-(30) are the most common or intuitive comparison strategies in ASL); (iii) an overt lexical item such as MORE, WORSE, BETTER, BEAT or SAME(-AS), as in (31);[11] and

[10] This sentence may be possible when the word *year* in English is fingerspelled. This option appears to be possible in contexts of language contact with English when talking about someone's age. Importantly, when the ASL word YEAR is used, this sentence is ungrammatical (see also the example that is not restricted to someone's age in (27c)).
[11] SAME(-AS) appears in a so-called equative construction, i.e., it involves comparison of two entities who display some property to the same extent (see Rett, 2020 for a recent overview). While we do not discuss equatives in this paper (i.e., constructions such as (31e) are largely set aside in what follows), we decided to incorporate such an example for two reasons: (i) it provides a broader picture as to what strategies are involved when discussing

(iv) a non-manual so-called intensification marker, which may involve the puffing of cheeks, the widening of the eyes, a body lean, or increasing the associated space of the manual sign (Wilbur et al., 2012; Wilbur, 2021), as in (32). As can be noted, ASL thus allows for different comparison strategies, which may or may not involve dedicated morphological means.

(29) a. MARIA OLD 25 BROTHER 10
Lit. 'Maria is 25 years old; her brother is 10 years old.'
(≈ 'Maria is older than her brother.')
b. HAIR left-hand-a-MARY CURLY right-hand-PAUL STRAIGHT
'Mary's hair is curly; Paul's hair is straight.' (≈ 'Mary's hair is curlier than Paul's.')
c. TRAIN A a-$CL_{vehicle}$b 100 KPH TRAIN B b-$CL_{vehicle}$a B IXb 150KPH
Lit. 'Train A moves 100 kph; train B moves 150 kph.'
(≈ 'Train B is faster than train A.')
d. HOUSE A TALL_1 [12] SIX METER. HOUSE B TALL_1 THREE METERS.
Lit. 'House A is 6 m tall; house B is 3 m tall.' (≈ 'House A is taller than house B.')
e. LIQUID A 90 DEG LIQUID B 45DEG
Lit. 'Liquid A is 90 degrees; liquid B is 45 degrees.'
(≈ 'Liquid A is hotter than liquid B.)

(30) ALEX a-IX TALL *(neutral-space*) JO b-IX TALL *(at-signer'-head)*
Lit. 'Alex is this tall, Jo is this tall.' (≈ 'Jo is taller than Alex.')

(31) a. JILL SMART JANE BETTER
Lit. 'Jill is smart; Jane is better (i.e., smarter).' ≈ 'Jill is smarter than Jane.'
b. COMEDIAN aIX FUNNY bIX WORSE
Lit. 'Comedian B is worse at being funny than Comedian A.'[13]
≈ 'Comedian B is funnier and Comedian A.'
c. MARY HEAVY PAUL BEAT
Lit. 'Mary beats Paul at being heavy.' (≈ 'Mary is heavier than Paul.')
d. MARY PAUL WEIGHT IX_{Mary} HEAVY MORE
'Mary is heavier than Paul.'
e. MARY a-IX TALL JANE a-IX TALL a-SAME-b.
'Mary is as tall as Jane.'

(32) neu-PERSON a-IX LAZY b-IX $\underline{\text{LAZY}}^{\underline{\text{intens}}}$
Lit. 'Person A is lazy; Person B is much lazier.' (≈ 'Person B is lazier than Person A.')

In what follows, we discuss these comparison strategies in connection to some diagnostics that have been proposed in the literature to probe for the presence or absence of degrees. In sections

comparison in ASL, and (ii) SAME(-AS) is pervasive in the corpus that is examined in section 6. This is an area where additional research in ASL is needed, as indicated at the end of this paper.

[12] The sign for TALL_1 in (29d) can be seen here: https://aslsignbank.haskins.yale.edu/dictionary/gloss/1174.html.

[13] Note that the literal reading produced by the English version is necessarily 'negative' (i.e., it has an implication of a negative nature, e.g., that someone is bad at doing something); however, this is not necessarily the case in ASL, as can be seen in the free translation. What (31a-c) point to is that items like BETTER, WORSE, as well as BEAT, should be explored separately in more detail (the latter has already received some attention in the literature; see Wilbur et al., 2018; see also Kentner, 2020; Kentner et al., 2020, the latter with mixed results).

5.1 and 5.2, we discuss the juxtaposition strategy in (29) and the overt lexical item strategy in (31), by focusing on crisp judgments and comparison involving a phrase indicating a differential measurement. We show that they behave differently with regard to crisp judgments, with (31) allowing and (29) disallowing them, but they behave similarly with regard to phrases involving measurement in that both strategies are incompatible with such expressions. In section 5.3, we turn to cases like (30) and (32), which, in general, pattern with the strategy in (31) (i.e., crisp judgments are possible, but adjoining phrases indicating a measurement yields ungrammaticality).

5.1 Crisp judgments

The literature indicates that crisp judgments involve the possibility of making nuanced distinctions when comparing individuals (see, e.g., Kennedy, 2007). Implicit comparative strategies, such as juxtaposition, normally yield infelicity in such contexts. In contrast, explicit comparative strategies, such as those that usually involve overt comparative morphemes, may be compatible with them. These strategies are illustrated in (33) in English.

(33) a. Compared to Sue, Mary is tall. *implicit comparison*
b. Mary is taller than Sue. *explicit comparison*

Thus, in connection to crisp judgments, (33b), where an explicit comparison strategy is present, may be uttered in a context where Mary is taller than Sue by just a couple of centimeters (a nuanced distinction). In contrast, it is infelicitous to utter an implicit comparison strategy against this context (33a).

While this test is not conclusive in connection to the degree vs. degreeless debate (Deal & Hohaus, 2019), it is applied here because it allows us to tease apart the comparison strategies in ASL in more detail, which is relevant in the upcoming sections, and provides a broader characterization of the different comparison strategies present in this language. In (34)-(39), we apply the crisp judgment test to the comparative strategies in (29) and (31); contexts to illustrate the targeted nuanced distinctions are provided.

(34) *Context:* Book A is 4 kilo. Book B is 4 kilo lb 1gr.
a. #BOOK A a-IX TRUE a-HEAVY BOOK B b-IX LIGHT
Lit. 'Book A is truly heavy; book B is light-wieght.
(≈ 'Book A is heavier than book B.)'
b. BOOK A a-IX 4 K-I-L-O BOOK B b-IX 4 KILO 1 OZ b-IX MORE / b-BEAT-a
'Book A weighs 4 kilos; book B weighs 4 kilos 1 ounce. Book B is heavier. / Book B beats book A at being heavy.'

(35) *Context:* Angle A is 45 degrees. Angle B is 43 degrees.
a. #ANGLE a-ANGLE A aCL:L b-ANGLE B NOT bCL:L
Lit. 'Angle A is this wide; angle B is not.' (≈ 'Angle A is wider than angle B.')
b. ANGLE a-ANGLE A 45 DEGREE b-ANGLE 43 DEGREE a-BEAT-b
'Angle A is 45 degrees; angle B is 43 degrees. Angle A beats angle B at being wide.'

(36) *Context:* Child A is Einstein. Child B is Stephen Hawking. While both are very smart, suppose that Hawking is a bit smarter.

a. #H-A-W-K-I-N-G a-IX SMART E-I-N-S-T-E-I-N NOT / STUPID
Lit. 'Hawking is smart; Einstein is not/is stupid.'
(≈ 'Hawking is smarter than Einstein.')
b. H-A-W-K-I-N-G a-IX SMART E-I-N-S-T-E-I-N b-IX SMART a-IX MORE SMART / a-BEAT-b
'Hawking is smart; Einstein is smart. Hawking is smarter than Einstein. / Hawking beats Einstein at being smart.'

(37) *Context:* We are going to talk about height. House A is 6 meters. House B is 5.95 meters.
a. #HOUSE A TALL_1. HOUSE B NOT
Lit. 'House A is tall; house B is not.' (≈ 'House A is taller than house B.')
b. HOUSE A TALL_1 SIX METER. HOUSE B TALL_1 5.95. HOUSE A a-BEAT-b
'House A is tall; it's 6 m. House B is tall. It's 5.95 m. House A beats house B.'

(38) *Context:* Maria was born 15 seconds before her twin brother.
a. #TWIN MARIA OLD a-POSS BROTHER NOT / YOUNG
Lit. 'Twin Maria is old; her brother is not/is young.'
(≈ 'Twin Maria is older than her brother.')
b. TWIN MARIA a-POSS BROTHER AGE MARIA 15 SEC BEFORE MARIA b-BEAT-a
'As for twins Maria's and her brother's age, Maria was born 15 seconds before. Maria beats her brother.'

(39) *Context:* Liquid A is 90 degrees. Liquid B is 85 degrees.
a. #LIQUID a-IX HOT b-IX NOT / COOL
Lit. 'Liquid A is hot; liquid B is not/is cool.' (≈ 'Liquid A is hotter than liquid B.')
b. LIQUID a-IX HOT 90 DEG bIX 85 DEG TRUE HOT a-BEAT-b
'Liquid A is hot; it is 90 degrees. Liquid B is also hot; it is 85 deg. Liquid A beats liquid B.'

As can be seen in (34)-(39), the (a) cases are infelicitous in the contexts targeting nuanced distinctions. These are instances of an implicit comparison strategy, i.e., juxtaposition (29) involves implicit comparison. In contrast, crisp judgments are possible in the (b) cases, where overt lexical items for comparison are present. This suggests that the strategy in (31) involves explicit comparison. As indicated, both strategies can be captured under a degree and a degreeless approach. In the next sections, however, we suggest that a degreeless approach is more appropriate.

5.2 Differential measure phrases

Building on the discussion in section 4.2, we turn to phrases indicating a measurement in comparative constructions. In section 4.2, we demonstrated that phrases such as *4 kilo(s)*, which have previously been argued to serve as evidence for a degree approach when they combine directly with gradable predicates, are not allowed in ASL. The absence of such a construction in the language is, in contrast, easier to accommodate under a degreeless approach insofar as there is nothing that need be said; in the absence of degree variables, phrases assigning a value to that unit are not possible. However, as the literature points out, in the case of the comparative, the

phrases involving a measurement become additionally relevant to the degree vs. degreeless debate. The main relevant diagnostic is a differential measurement (see Stassen, 1985 for seminal work in this regard and many others since). In the case of differential phrases, the measurement corresponds to the value difference between the values for two individuals according to some property. This is illustrated in (40), where *1 cm* is the phrase that, in the comparison structure below, indicates the difference in height between Mary and Sue.

(40) Mary is 1 cm taller than Sue.

In a degree approach, the possibility of such phrases is accounted for, since the (precise) value difference between degrees can be computed directly; the measure phrases target such a difference (see Kennedy, 2007; Pedersen, 2015; Schwarzschild, 2005; a.o.; see also footnote 1). In contrast, on a degreeless approach, there are no units that can be taken into account to determine such a difference (see Bochnak 2015 for a discussion why this is preferable on theoretical grounds over an approach such the one in van Rooij 2011, where measurements are handled; see also Deal & Hohaus, 2019). In fact, this is perhaps the most compelling test in the literature to argue that a language should be analyzed under a degree approach (see Martínez Vera, 2021 for recent discussion in this regard; see also Deal & Hohaus, 2019).

Regarding this diagnostic, the ASL examples appear in (41)-(46) below[14]:

(41) a. *BOOK A a-IX TRUE a-HEAVY BOOK B b-IX LIGHT 2 LB
'Book A is 2 pounds heavier than Book B.'
b. *MARY PAUL WEIGHT IX_{Mary} HEAVY MORE 4 LB
'Mary is 4 pounds heavier than Paul.

(42) a. *ANGLE a-ANGLE A aCL:L b-ANGLE B NOT bCL:L 4 DEGREE
'Angle A is 4 degrees wider than Angle B.'
Context: aROAD aA IX BEFORE 6FT WIDE CONSTRUCTION WIDE*[large-width]* bROAD-B. bB BEFORE WIDE*[neutral-width]*CONSTRUCTION WIDE*[small-width]* 2 FOOT.
'Road A used to be 6ft. wide before the construction; road B used to be 2ft. before the construction.
b. *ROAD A BEAT ROAD B 4 FEET.
'Road A beats road B by 4 ft. in terms of width.'

(43) a. *H-A-W-K-I-N-G a-IX SMART E-I-N-S-T-E-I-N TWICE
'Hawking is twice as smart as Einstein.'
b. *JILL SMART JANE BETTER TWICE
'Jill is twice as smart as Jane.'

(44) a. *ALEX a-IX TALL *(neutral-space)* JO b-IX TALL *(at-signer's head)* 4 INCH
'Jo is 4 inches taller than Alex.'

[14] Kentner (2020) includes some cases where a phrase indicating a measurement is possible. However, the results are very inconsistent: across predicates, no construction is accepted by all her consultants (on average, when a case is accepted, it is only accepted by one consultant). Our survey was consistent across predicates and consultants: these phrases are disallowed across the board.

b. *HOUSE A TALL_1 SIX METER. HOUSE B TALL_1 5.95. HOUSE A a-BEAT-b 5 cm.
'House A is tall; it's 6 m. House B is tall. It's 5.95 m. House A beats house B by 5 cm.'

(45) a. *MARIA a-POSS BROTHER OLD 40 a-IX YOUNG 15
'Maria's brother is 40 years old; she is 15 years younger.'
b. *MARIA a-POSS BROTHER OLD 15+YEAR(upward)
'Maria is 15+ years older than her brother.'

(46) a. *LIQUID a-IX HOT b-IX NOT 5 DEG
'Liquid A is 5 degrees hotter than liquid B.'
b. *LIQUID a-IX HOT 90 DEG bIX 85 DEG TRUE HOT a-BEAT-b 5 DEG
'Liquid A is hot, 90 deg, liquid B is also/really hot, 85 deg. Liquid A is hotter by 5 degrees.'

As can be seen in the (a) cases, the implicit comparison strategy in (29) (i.e., juxtaposition) is incompatible with differential measure phrases. This is consistent with a degreeless approach, which is in line with what has been argued for in the previous sections in this paper (the sentences' denotations would be understood along the lines of the denotations in (7), with bare adjectives; a common context parameter would be involved, so that the relevant individuals are evaluated against the same comparison class). Interestingly, the explicit comparison strategy in (31) is also incompatible with the relevant phrases, as the (b) cases in (41)-(46) show. This further suggests that such an explicit comparison strategy should be captured under a degreeless approach as well. Moreover, the aforementioned also means that the crisp judgment data discussed in section 5.1 should be captured in terms of a degreeless approach.

What would all of this mean then? With regard to the semantics of the lexical items in the explicit comparison cases, for illustration, consider (47) with BEAT. Building on the discussion in this and the previous sections, the denotation for this element (but in principle extendable to the others in (31)) would be as in (48b), which is the denotation for a comparative element in a degreeless approach (see (6a)). Note that the view argued for in this paper offers a denotation for BEAT that is different from the proposal in Kentner et al. (2020), who rely on degrees—their denotation is understood along the lines of (48a) (see (8a)), where degrees are involved. The denotation of (47) appears in (48c).[15]

(47) MARY HEAVY PAUL BEAT = (31a)
Lit. 'Mary beats Paul at being heavy.' (≈ 'Mary is heavier than Paul.')

(48) a. *$[\![\textbf{BEAT}]\!] = \lambda y \lambda P_{\langle d,et\rangle} \lambda x \exists d, d'[P(x)(d) \,\&\, P(y)(d') \,\&\, d > d']$
b. $[\![\textbf{BEAT}]\!]^c = \lambda y \lambda P_{\langle k,et\rangle} \lambda x \exists c'[P(x)(c') = 1 \,\&\, P(y)(c') = 0]$

[15] While the denotation in (48b) is rather concrete, it must be kept in mind that our approach does not go in depth into the compositional details, since our main goal lies in the bigger picture question as to what analytical tools should be used to analyze ASL. In any event, we are providing a particular instantiation of the semantics of BEAT that, e.g., assumes a particular order for its arguments taking into account their surface order, so that the reader can get a rather concrete grasp as to how these constructions would be analyzed in a degreeless approach (see Kentner, 2020 for detailed discussion of the syntax of constructions with BEAT). We point out future research directions in this regard at the end of this paper.

c. $[\![\textbf{(47)}]\!]^c = \exists c'[heavy(m)(c') = 1 \ \& \ heavy(p)(c') = 0]$

What this means, overall, is that a degreeless approach seems to be preferable in the analysis of gradable predicates in ASL. In the next section we turn to the remaining comparison strategies.

5.3 Comparative depiction

The discussion in the previous sections has shown that a degreeless approach can accommodate the data with regard to both juxtaposition (29) and lexical comparison with items such as BEAT and MORE (31). This section turns to the comparative depiction strategies in (30) and (32) ((49a) repeats (30); (49b) repeats (32)). Simply put, the key with regard to these strategies consist of depicting or demonstrating, i.e., directly representing how some property applies to the two individuals under consideration in the signing space (see Davidson, 2015, 2021 for discussion of the difference between depiction and demonstration; we set this distinction aside here for simplicity).

(49) a. ALEX a-IX TALL *(neutral-space*) JO b-IX TALL *(at-signer'-head)*
Lit. 'Alex is this tall, Jo is this tall.' (≈ 'Jo is taller than Alex.')

b. PERSONneu a-IX LAZY b-IX LAZY$^{\underline{intens}}$
Lit. 'Person A is lazy; Person B is much lazier.'
(≈ 'Person B is lazier than Person A.')

The reason for delaying the discussion of these constructions until this point is two-fold. On the one hand, (49a) is intuitively similar to English expressions such as *this big* or *yea tall*, which appear to directly represent the intended heights, which, in turn, is reminiscent of degree demonstratives (see König & Umbach, 2018). The same can be said for other predicates that can be depictable or demonstratable, e.g., WIDE, LARGE, SMALL, etc. On the other hand, what we gloss in (49b) as *.intens* may involve puffing the cheeks, squinting the eyes, or some other bodily representation of the increased or decreased amount relative to some predicate (Kentner, 2020; among others). What this means is that utterances such as those (49) build on the visual nature of sign languages, employing depicting or demonstration tools—such an idea has been discussed in the literature in several ways (see, e.g., the iconic potential in Aristodemo & Geraci, 2018, the Visibility Hypothesis in Wilbur et al., 2012, or Vertical Ordering in Davidson & Gagne, 2019[16]). In addition, arguably, the strategies in (49) involve depiction and/or demonstration (see Davidson, 2015, 2021), which more generally separates (49a,b) from other comparative cases, both in ASL and in spoken languages. Importantly, in the remainder of this section, we show that cases such as those in (49) can be largely accounted for under a degreeless approach as well.

With regard to the constructions in (49), let us first make some comments on the issue of direct depiction and demonstration. Depiction, which has also been indicated to make reference

[16] In our attempt to remain comprehensive, we also add recent work that captures the intuition about the importance of the notion of increase in height, which is discussed in Davidson & Gagne (2019) in connection to quantification (and the individuals which are involved there). Here we will mention it only in passing and briefly return to it in section 7.

(i) *Interpretation of continuous vertical height* (Davidson & Gagne 2019 (47), adapted)
a. Vertical ordering (i.e., physically higher in signing space in the frontal plane)
b. Vertical ordering corresponds to mereological part-hood.

to degree demonstratives, has been addressed by authors such as König & Umbach (2018), among others. Previous research indicates that these demonstratives are directly referential in nature. Unlike standard demonstratives, they are best analyzed in terms of similarity between the target of the demonstration gesture and the referent of the linguistic phrase. Importantly, while one can imagine a variety of mechanisms to capture this phenomenon (see König & Umbach, 2018 for discussion), none require a degree approach per se (i.e., these may be seen as orthogonal, but integratable under either approach).

Related approaches which involve some form of depiction or demonstration can be found in, e.g., Aristodemo & Geraci (2018) and Wilbur et al. (2012), which are particularly relevant for the discussion in this paper, since their work addresses gradability specifically. The former argue for the presence of an iconic degree scale (50a), the boundaries of which have been argued to be expressed manually (50b) (Wilbur et al. 2012). While Aristodemo & Geraci (2018) apply their analysis to LIS, they suggest that it is extensible to sign languages in general, which is why it becomes relevant in the current discussion.

(50) a. *Iconic degree scale* (Aristodemo & Geraci 2018, (36))
An iconic scale is the order-preserving mapping of a set of ordered degrees onto a set of ordered points in the signing space (i.e., a line on the horizontal, vertical or lateral plane). Each degree of the scale is represented as a point along a line.

b. *The Visibility Hypothesis* (Wilbur et al. 2012, (10))
Sign languages express the boundaries of semantic scales by means of phonological mapping.

The views articulated in (50a,b) suggest that sign languages, such as ASL, would have the potential to depict or demonstrate degrees. The idea is that if degrees (via depiction or demonstration) are available for perception, they should be directly retrievable (as much of the perception literature suggests, e.g., Corina et al., 2004; in this case (near-)native signers would outperform non-native and naive signers on such a task). Note that (50a) makes reference to iconicity, where the main identificational requirement is the potential mappability of the predicate in space for its future anaphoric retrieval (see Aristodemo & Geraci, 2018 for detailed discussion in this regard). Indeed, what matters is whether a predicate introduces a locus in the spatial plane along the scale in (50a); for concreteness, we represent such a property by means of the feature [±locus]. Furthermore, Aristodemo & Geraci (2018) claim that if a gradable predicate is [+locus], the comparative counterpart thereof will involve a synthetic morpheme; if the predicate is [–locus], then its comparative counterpart would be analytic. Following such a reasoning, ASL would have predicates which are [+locus], such as TALL, WIDE, LARGE; in contrast, SMART, LAZY, FAST are [–locus]. What this means for the comparative cases is that TALL, WIDE, LARGE are expected to be modified by means of a bound comparative morpheme, while SMART, LAZY, FAST would be modified by a free one.

As the discussion in the previous sections has shown, such an approach does not capture the ASL facts: we have shown that all types of predicates (including cases such as TALL and WIDE) behave identically. In fact, an even stronger claim can be made: not only do the ASL predicates not display a distribution that follows Aristodemo & Geraci's (2018) approach, but in fact their distribution involving depiction or demonstration corresponds with what was discussed in the previous sections, namely, once the diagnostics are applied, there is no reason to think that degree variables are present in ASL. We now turn to the discussion of such diagnostics, first

addressing the strategy in (49a) (which involves an actual manual modification of the relevant predicate), and then turning to the strategy in (49b) (what we have glossed as .*intens*). With regard to (49a), we have found that it patterns with the strategy involving the presence of overt lexical items, such as BEAT and MORE: crisp judgments are acceptable, which suggests that this is in fact a case of an explicit comparison strategy. Yet, combining the relevant expressions with a phrase that indicates a measurement remains impossible. This is shown in (51)-(53).

(51) a. a-IX a-TALL / a-WIDE / a-LARGE b-IX b-SHORT / b-NARROW / b-SMALL
Lit: 'A is tall/wide/large; B is short/narrow/small.'
(≈ B is shorter/narrower/smaller than A.')
b. a-IX a-SMART / a-LAZY / a-FAST b-IX b-STUPID / b-ACTIVE / b-SLOW
Lit. 'A is smart/lazy/fast and B is stupid/active/slow.'
(≈ B is less smart/more active/slower than A.')

(52) *Context: Alex is 1 cm taller than Jo*
ALEX a-IX TALL*(neutral-space)* JO b-IX TALL *(minimal upward movement)*
'Jo is a tiny bit taller than Alex.'

(53) *ALEX a-IX TALL*(neutral-space)* JO IXb TALL *(minimal upward movement)* 1 cm
'Jo is 1 cm taller than Alex.'

As indicated, this pattern is captured under a degreeless approach. In other words, while in terms of juxtaposition, there is no difference between the [±locus] adjectives (51), in terms of crisp judgments (51) and measure phrases (52), predicates that iconically represent or depict the comparison directly (i.e., predicates that are [+locus]) perform on par with other comparative morphemes (e.g., MORE, BEAT; a semantics along the lines of (48b), would be needed here for, e.g., upward movement in the case of TALL).[17] This creates a problem for Aristodemo & Geraci's (2018) view in that there is no apparent reason why measure phrases cannot be combined with the relevant expressions, since degrees are readily available.

Two additional issues arise when Aristodemo & Geraci's (2018) (50a) is applied to ASL. For illustration, consider the predicate HEAVY[18] (54), which is both iconic and [+locus] (since the relevant point in the signing space is easily retrievable), but what is discussed applies more generally to other predicates, such as TALL, WIDE, etc.

(54) BOOK A a-IX 4 KILO BOOK B b-IX 4 KILO 1 OZ…
a. …a-IX HEAVY b-IX HEAVY*(minimal downward movement)*
'Book A weighs 4 kilos; book B weighs 4 kilos 1 ounce. Book B is heavier.'
b. …b-IX MORE / b-BEAT-a
'Book A weighs 4 kilos; book B weighs 4 kilos 1 ounce. Book B is heavier. / Book B beats book A at being heavy.'

(54a,b) demonstrate that HEAVY allows (at least) two types of comparative strategies. As in the case of the *upward movement* in TALL, the *downward movement* in HEAVY in the context of the crisp judgment indicates an explicit comparison strategy (54a). This is in fact predicted by

[17] By assumption, iconic predicates that are [–locus], e.g., SMART and LAZY, cannot be tested here.
[18] The relevant lexical item can be seen here: https://www.lifeprint.com/asl101/pages-signs/h/heavy.htm.

Aristodermo & Geraci (2018): there is an iconic predicate that is [+locus] where a synthetic form is present. However, another strategy involving explicit comparison is possible here as well (54b): an overt free-standing lexical item, MORE or BEAT in this case, is present. Importantly, this possibility is not predicted by Aristodermo & Geraci in connection to the depiction strategy illustrated above (only the synthetic form in (54a) should be available).

In fact, what has been discussed is not restricted to cases such as HEAVY (or TALL, WIDE, etc.). It turns out that every predicate in our sample is compatible with at least two comparative strategies (e.g., one similar to (54a) and another one along the lines of (54b), as illustrated in this section). Importantly, this is the case irrespective of the potential access to the iconic scale (50). What is more, as indicated throughout this paper, measure phrases (see sections 4.2, 5.2, as well as this section) are not possible in the expressions under consideration. All in all, what this means is that Aristodemo & Geraci's (2018) approach to LIS does not seem to capture the ASL facts, thus casting doubt on the alleged universality of their approach for sign languages in general (which they suggest). Instead, the study of ASL actually points in a different direction, namely, that ASL is better understood within a degreless approach.

To end this section, we now turn to the strategy in (49b), which has been previously labeled *intens*, intensity or intensification, and involves a manual (de-)acceleration, a variety of non-manuals (such as puffed cheeks, squinted eyes, brow raise), among others (Kentner, 2020; Loos, 2014; Padden, 1983; Shlenker & Lamberton, 2021; Wilbur et al. 2012). As in Wilbur et al. (2012), we observe an overall increase in tension of the articulators, movement modifications, enlarged or reduced trajectory, delayed release of the movement, non-manual modifications in the face, head, and torso. Following the literature for ease of exposition, which sets aside these nuanced differences, we simply adopt ***.intens*** as the glossing convention for the strategy in (49b), which is further illustrated below (55). We also gloss the addition of what appears to be a synthetic comparative on the predicate as subscripted *increase*.[19]

(55) a. a-IX a-TALL / a-WIDE / a-LARGE / a-OLD
intens
b-IX b-TALL$_{increase}$ / b-WIDE$_{increase}$ / b-LARGE$_{increase}$ / b-OLD$_{increase}$
Lit. 'A is tall/wide/large; B is taller/wider/larger.'
(≈ B is taller/wider/larger than A.')

intens
b. a-IX a-SMART / a-LAZY b-IX b-SMART$_{increase}$ / b-LAZY$_{increase}$
Lit. 'A is smart/lazy; B is smarter/lazier.'
(≈ B is {smarter/lazier} than A.')

intens
c. a-IX a-FAST b-IX b-FAST
Lit. 'A is fast and B is faster' (≈ B is faster than A.')

The examples in (55) show that, just like other comparative strategies, cases with ***.intens*** produce the relevant target reading. Note that ***.intens*** is applicable across all types of predicates (54a-c) (i.e., it does not display any sensitivity regarding the [±locus] distinction discussed above). Furthermore, it can co-occur with another comparative strategy or be the only element in the

[19] In this paper, we do not attempt an analysis of these cases, simply pointing out how they fit with our main purpose with regard to gradability. See König & Ulmbach (2018), as well as Davidson (2015, 2021) and Ramchand (2019) for relevant discussion.

utterance signaling comparison (see the contrast between (55a,b) vs. (55c)). While it is also a type of depictive strategy and thus its semantics needs to be carefully considered (see Davidson, 2015 et seq.), this task lies outside the current goals of this work. There has been some initial work in this regard. Thus, Kentner (2020) actually argues that ***.intens*** is not a comparative morpheme at all. For instance, aside from being able to co-occur with another comparative morpheme (55a,b), sentences with ***.intens*** disallow crisp judgements: (55c) is unacceptable if the car B drives 1 or 2 mph faster than car A. In other words, in contrast to the depictive (49a) (and the strategy involving overt lexical comparative items in (31)), ***.intens*** does not behave as a bona fide explicit comparison strategy. In this sense, Kentner suggests that ***.intens*** actually behaves on par with English *very*. Such an analogy, however, is not strict, since ***.intens*** offers several possibilities that *very* (or its counterparts in other languages) do not. For instance, it does not represent the endpoint in the scale of the relevant predicate, as the parallel data from Japanese Sign Language suggests (Matsuoka & Gajewski, 2013), and it can be amended for more or less intensity (which we gloss here as ***.intens***< and ***.intens***+++ respectively). As illustrated in (56), in terms of speed, ***.intens*** renders an interpretation of more or less speed.

(56)

a. a-IX a-FAST b-IX b-FAST
   Lit. 'A is fast and B is a little faster.' (≈ 'B is a little faster than A.')

b. a-IX a-FAST b-IX b-FAST
   Lit. 'A is fast and B is a lot faster.' (≈ 'B is way faster than A.')

In other words, further research on ***.intens*** is needed. While we are not in a position of making definitive claims with regard to ***.intens***, we can indicate how expressions with such an element fare with regard to the diagnostics that have been discussed in this paper in terms of gradability. It is worth mentioning that additional elements beyond the degree vs. degreeless debate (in particular, the nature of ***.intens*** itself) are likely to be at stake here to account for the relevant data.

Once again, our findings with regard to ***.intens*** are compatible with the degreeless approach argued for in this paper. Below we show the data coming from degree questions (57) (see section 4.1) and differential measure phrases (58) (see section 5.2). As is shown, these examples are ungrammatical, which is compatible with a degreeless approach to ASL.[20]

[20] We must mention that there was one exception regarding measure expressions: in only one case in our data did we find that a measure expression was accepted. Such a case involved ***.intens***. The relevant example appears in (i) below:

(i)
LIQUID a-IX a-DENSE b-IX b-DENSE$_{decrease}$ 15 DEGREE DENSE$_{decrease}$ a-IX IMPOSSIBLE
'It's impossible for this liquid to be 15 degrees less dense than that one.'

Our general suspicion is that such a case may be accounted for independently of degrees. In addition to the extensive evidence that we have gathered, where there is no indication of the presence of degree variables in ASL in connection to gradability, there is recent research suggestive of ***.intens*** functioning as an intensifier (Schlenker & Lamberton, 2021). We tentatively note that other languages employ a variety of word-order manipulative strategies in cases involving intensification (Beltrama & Trotzke, 2019; see also Beltrama & Bochnak, 2015). This also corresponds with a general comment from our consultants, who report that ***.intens*** implies "an extra comment or

(57) _____intens
a. *aIX BOOK HEAVY WHAT / HOW
'How heavy is this book?'

_____intens
b. *ANGLE WIDE WHAT / HOW?
'How wide is this angle?'

_____intens
c. *KID SMART WHAT / HOW
'How smart is this child?'

_____intens
d. *2-POSS CHILDREN TALL WHAT / HOW
'How tall are your children'

_____intens
e. *2-POSS MOTHER OLD WHAT / HOW
'How old is your mother?'

_____intens
f. *LIQUID aIX HOT WHAT / HOW
'How hot is this liquid?'

_____intens
(58) a. *a-IX a-TALL b-IX b-TALL$_{increase}$ 1 INCH
'B is 1 inch taller.'

_____intens
b. *a-IX a-OLD b-IX b-OLD$_{increase}$ 5 YEAR
'B is 5 years older than A.'

The discussion in sections 4 and 5 thus suggests that ASL should be analyzed as a degreeless language. While it has both implicit and explicit comparison strategies, they can all be readily accounted for under a degreeless approach, and not under a degree approach. We have thus proposed that ASL should be analyzed as a degreless language.

6. Further support from the SLAAASH corpus

Given the findings of the previous sections, which are based on our fieldwork, we turned to a corpus of spontaneous ASL for further support. Note that this by itself is not a trivial issue: since around 95% of the deaf and hard of hearing (DHH) signers do not acquire ASL natively, in an ASL corpus by DHH signers, one may in principle expect a certain amount of variation due to a variety of reasons, from language deprivation and resulting innovations to effects of language contact. We examined the SLAAASH corpus (Lillo-Martin & Chen Pichler, 2008), which includes the spontaneous production of 4 different Deaf children and their adult caregivers or experimenters in ASL. The corpus consists of over 200 hours of data in total. The corpus contains both transcriptions and English translations of ASL utterances (these were provided by the Deaf and near-native signers). An overview of the SLAAASH corpus appears in Table 1.

maybe something like that" (Consultant X). The current sparsity of such occurrences in the elicited data (i.e., 1 token) creates an impetus for future research in this regard.

Child	# sessions	Age begin	Age end	Time	# glosses	# child uttrs
ABY	79	1;04.22	3;04.07	73:43	130,000	16,600
JIL	83	1;07.03	3;07.09	79:16	119,000	17,800
NED	44	1;05.28	4;01.28	40:00	60,000	9,000
SAL	18	1;07.18	2;10.01	17:11	23,000	3,900
Total	224			210:10	332,000	47,300

Table 1. SLAAASH database (https://slla.lab.uconn.edu/slaaash/)

Our examination of the corpus was guided by several considerations. First, taking into account the variety of comparative strategies reported in the literature and produced during elicitation, we expected to find a variety of adjectives across the various databases, although we expected a developmental trajectory in children's production both in terms of adjectives themselves as well as gradability-related structures (see Hohaus et al., 2014). This expectation probes the existence of gradable adjectives in constructions with (at least on the surface) bare adjectives and bears consequences on the potential presence of modification via degree expressions (which may be syntactically instantiated, as, e.g., DegP). For instance, Hohaus et al. (2014) present the following developmental trajectory in the acquisition of English:

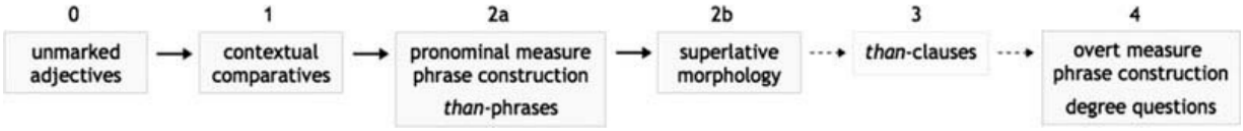

Figure 1. Hohaus et al. (2014): 231

The elicitation data reported in the previous sections did not produce acceptable ASL sentences at the right edge of the Figure 1 (such as degree questions and phrases indicating a measurement). However, we did not rule this possibility out in the corpus. We hypothesized that if there is an option of making use of degrees for a child grammar, then certain types of information in the input will trigger acquisition and subsequent production of the relevant structures (Snyder, 2007 et seq.; Hohaus et al., 2014; among others); thus, we did explicitly focus on the overt measure phrase constructions and degree questions.

6.1 Methodology

The corpus was examined for the presence of (i) the gradable predicates in (9) and (ii) the variety of degree constructions discussed in sections 1-5 co-occurring with the relevant adjectives. This was done by using ELAN 6.2 (Crasborn & Sloetjes, 2008). All instances of gradable expressions were tagged in child and adult data (up to 4 adults). Furthermore, all instances of the relevant types of predicates were tagged in child and adult production to ensure their presence in the corpus. Broadly speaking, we followed the conventions for child and adult data analysis for CHILDES (MacWhinney, 2000) and, more specifically, for sign data in Chen Pichler et al. (2010). Since omission of overt comparative morphology is a possibility (see the comparison strategies in (29)-(32)), the search was conducted using both ASL and English free translation (when available); the latter has been provided by deaf and/or (near-)native signers. This means that if the signer observed a comparative, even if no overt lexical item was present, we expected the English translation to register it. It is worth noting that depiction and juxtaposition comparative strategies cannot produce a taggable sample; however, analytic comparatives do.

Thus, the number of instantiations of each of the overt comparative lexical items was calculated: MORE, BEAT, BETTER, WORSE; for completeness, we also looked at instances of the equative SAME(AS), and the superlative MOST (see Bobaljik, 2012; Dunbar & Wellwood, 2016 for discussion of MOST being built from a comparative core; see also Coppock et al., 2020). The complete list is provided in the next section (see Table 2). Additionally, both analytic and synthetic comparative strategies were also tagged in the English translation (when available) and the findings were cross-referenced against the original production in ASL.[21]

6.2 Results

Among the adjectives in (9), every type of adjective was attested, either in adult or in child data, or in both. In terms of comparison strategies, each lexical item was independently attested (N = 120-5000) both in isolation and in multi-word utterances, produced both by adults and children at various ages (this is comparable to observations in Hohaus et al., 2014). However, narrowing the inquiry and following the literature, we focused on the multi-word utterance only. Table 2 shows the distribution of the comparative lexical items in multiword environments.

Item	Data-base	CHI	Adult 1 /MOT	Adult 2 /FAT	Adult 3	Other adult
MORE	ABY	100	66	38	36	190
	JIL	141	42	39	0	264
	NED	34	32	0	2	0
	SAL	42	0	0	0	0
BETTER	ABY	40	44	16	2	24
	JIL	9	0	3	3	51
	NED	6	10	0	0	0
	SAL	8	0	0	0	0
WORSE	ABY	0	2	0	0	0
	JIL	0	2	0	3	0
	NED	0	0	0	0	0
	SAL	8	0	0	0	0
BEAT	ABY	0	0	0	0	0
	JIL	0	0	0	0	0
	NED	0	7	0	0	2
	SAL	0	0	0	0	0
MOST	ABY	0	0	0	0	0
	JIL	0	1	0	0	0
	NED	0	0	0	0	0
	SAL	0	0	0	0	0

[21] We set aside any instances of ***intens*** (until further research) unless the English translation (supplied by the deaf or hard of hearing transcribers) of the utterance suggested its use alone as a comparison along the lines of (48b). Importantly, no such cases were found in the corpus.

SAME (-AS)	ABY	94	444	214	124	64
	JIL	405	888	366	96	153
	NED	140	242	128	36	0
	SAL	196	224	68	4	0

Table 2. Overt comparative lexical items (multi-word utterances)

For all of the children and all of the lexical items in Table 2, the earliest to emerge (as measured by FRU; see Snyder, 2007 and references therein) were MORE and SAME(AS) (Table 3). This is perhaps expected given the absence of the expected variety of overt lexical items in the input (Figure 2). Figure 2 also demonstrates the lack of immediate relationship between exposure and production, at least in terms of the relative frequency counts, though due to the low numbers, no statistical analysis has been attempted.

Item	ABY	JIL	NED	SAL
MORE	17	21	18	19
BETTER	–	–	20	22
WORSE	–	–	–	33
BEAT	–	–	23	–
MOST	–	–	–	–
SAME(AS)	21	21	26	33

Table 3. FRU of overt comparative LIs in multi-word utterance (in months)

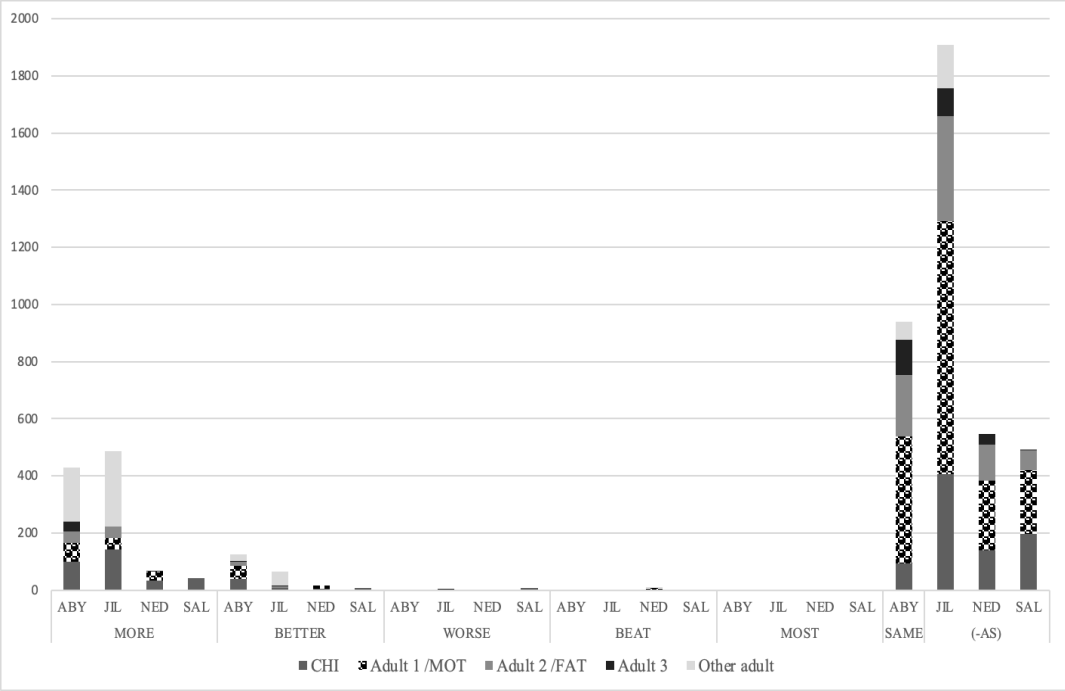

Figure 2. Input vs. production of comparative LIs in multi-word utterances

Crucially, we observed zero tokens of the items of interest, i.e., tokens involving comparison of a gradable property. That is, on the one hand, in each of the databases, where MORE, for instance, co-occurred with another lexical item forming a phrase, that item was an NP, as in (59a). That is, across all of the databases in SLAAASH, we have observed no instances of MORE in combination with adjectives, as in (59b).

(59) a. MORE WATER *extensively attested*
'I want more water.'
b. *MORE OPEN / SMART / LAZY / GREEN / … *not attested*
'more open / smarter / lazier / greener / …'

On the other hand, paralleling comparatives with phrases indicating a measurement (see sections 4.2, 5.2 and 5.3) were not attested either in any word order (with and without other language specific processes, such as argument omission). Instead, several tokens of predicates, predicted to contain a comparative form but omitting it, relied on contextual cues, such as in the example below:

(60) SEE OLD SISTER JIL, Adult2, #2225
'I (want to) see the older sister.'

What do we conclude from these data? First and foremost, we take the data above to point to the fact that comparison strategies of all types do exist in the corpus, which corroborates the elicited production reported in the previous sections. Furthermore, the data show that gradable adjectives are present in the input to children as well as in the children's production. The same can be said about comparative lexical items. Importantly, we have seen no evidence of the two being used together. Note that, also in line with what was found in elicitation, the analysis of the corpus showed that all the predicates behaved identically. Finally, we asked whether children either produced or were simply exposed to comparatives with degree questions or phrases involving a measurement. These pieces of data are not attested in the corpus. Thus, the corpus data dovetail the elicited production: while lexical items associated with gradability are present in the languages of both children and adults, we have seen no evidence of the structures that point to a degree approach; instead the data in the corpus can be accommodated under a degreeless analysis of ASL.

7. Conclusions and future directions

This paper has addressed gradability in ASL, focusing on the debate between degree and degreeless approaches cross-linguistically. In contrast to what has been discussed for ASL, where it has been proposed that ASL gradable predicates introduce degree variables, we have argued that the ASL data should be analyzed under a degreeless approach. Such an approach provides a unitary account that can capture an ample variety of constructions involving gradable predicates in this language. Our theoretical claim has been grounded in two types of evidence, which was built on a comprehensive examination of adjectives across different constructions (e.g., different comparison strategies, differential comparatives, questions targeting degrees, crisp judgments, etc.). The first type of evidence consisted of elicitation and playback with 4 consultants across a variety of predicates and constructions (the largest sample that has been gathered to date in this domain). The second type of evidence comes from the SLAAASH corpus (Lillo-Martin & Chen

Pichler, 2008), totaling over 200 hours of spontaneous production of four different Deaf children (ages 1;06-4;09), and their adult caregivers or experimenters in ASL. Our approach has further challenged Aristodemo & Geraci's (2018) proposal whereby sign languages may directly represent degrees due to the visual nature associated with using space for language. Such a claim does not find support in ASL.

Let us point out as well that the data presented here, which has dealt with a reasonably vast number of predicates making use of different methodologies, serves as impetus for the re-examination of previously suggested analyses. For instance, BEAT has been initially looked at both syntactically and semantically, but all authors admit that further analyses are needed (Abner et al., 2017; Kentner et al., 2020; Wilbur at al., 2018). In at least some of the aforementioned works, BEAT has been argued to be a verbal comparative, similar to *exceed* in English and the relevant comparative structures in Hausa, Aymara, Mandarin, etc. (see Stassen, 1985). Verbal comparatives in general have not received sufficient attention in the literature; at least some existing work points to a non-degree analysis of such elements independently, albeit from a non-typological point of view (Xiao, 2007). Further analysis into BEAT, without assuming degrees (contra Kentner et al., 2020) would make a contribution to this literature directly.

Something similar must be said for MORE, as well as other overt items that have been previously examined in the literature on ASL (Kentner, 2020; Kentner et al., 2020). That is, new analyses of the elements already explored by others, as well as of the elements that have not been studied, are in order. The latter set includes items such as WORSE, which is glossed as a comparative form of *bad* in English (although whether it functions as such remains unclear, see (31b)), and SAME(AS),[22] which picks up two referents (*a* and *b*) potentially independently possible at different heights on the vertical scale (as in, e.g. Davidson & Gagne, 2019). Note that, intuitively, SAME(-AS) might be considered an equative. Like verbal comparatives, equatives have not received much attention in the literature either (see Rett, 2020). However, given the fact that, in the corpus, SAME(-AS) was the most frequently overtly used item (with MORE), it deserves special attention. In addition, the data presented here suggest that a more careful look at the implicit comparative structures as well as what we (after others) have broadly glossed as *.intens* is needed.

Finally, this paper did not offer an explicit semantics for measurements (or lack thereof), or degree questions (or lack thereof), or demonstrations in ASL, nor did it set out to do so. What we argued instead was as follows: a theory that assumes degrees will need to constrain itself against the inability of the language to do all the things that one might need degrees for, at least under some approaches (see Bochnak, 2015; Deal & Hohaus, 2019). That is, we offered a path for how such a semantics could be envisioned specifically for ASL, i.e., a degreeless approach. In order to be precise about each structure, however (be it a comparative demonstration or a verbal explicit comparison, etc.), more dedicated research is in order, which further takes into consideration the diversity of signer profiles.

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[22] The lexical item can be retrieved here: https://aslsignbank.haskins.yale.edu/signs/search/?search=&keyword=same, and here https://www.lifeprint.com/asl101/pages-signs/s/same.htm.

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