13

Prosodic Constructions

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13.1 Introduction

Prosody is an invaluable component of effective spoken communication, particularly in situated dialogue, where it supports the accomplishment of many pragmatic functions, including many relating to turn-taking, to conveying stance, to marking topic structure, and so on. Pinning down how prosody does these things is not easy. While one can readily notice that prosody plays a role in some function, such as marking an utterance as a complaint, identifying how it does so is hard.

However, over the past two decades, a diverse group of pioneering researchers has been examining the phonetic details of the prosody of dialogue behaviors. In 2010, Richard Ogden, noting how a pragmatic function may be conveyed by a temporal configuration of prosodic features, introduced the term 'prosodic construction' to describe such form–function pairings (Ogden 2010). Subsequent work by Day-O'Connell (2013), Niebuhr (2015), and others, as surveyed elsewhere (Ward 2019), has elucidated the detailed properties of several prosodic constructions and systematized the notion.

The first aim of this chapter is to provide an overview of the notion of prosodic constructions, and the second is to discuss the similarities and differences between prosodic constructions and grammatical constructions. The chapter is structured around eight key aspects of prosodic constructions, covered one by one in the next eight sections. These observations and claims are illustrated using examples from American English, taken mostly from Ward (2019). The chapter concludes by discussing the advantages of using the notion of prosodic construction for analysis and overviewing some prospects and key challenges.

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13.2 A Prosodic Construction Is a Combination of Components

One way to express admiration of a cute baby is by saying *awwww* with a very specific prosody. This includes a single very long syllable, high pitch that is fairly flat with a long shallow dip in the middle, creaky voicing, and nasalization. None of these individual features conveys the meaning of admiration, but their combination does. The meaning of the whole being more than the meaning of these parts, it is appropriate to describe this pattern as a construction: a specific form–function mapping. Figure 13.1 summarizes with an informal visualization.

As this example illustrates, prosodic constructions may involve many prosodic features. Indeed, the list of features identified as having a role in some prosodic construction is just the list of all perceptually salient pitch features, as summarized in Table 13.1.

Prosodic constructions may also involve non-prosodic components, such as lexical items, other phonetic elements and properties, and multimodal behaviors. For example, the Awww-of-Cute Construction involves not only specific lexical content, namely, the word *awww*, but also initial and final glottal stops, a gentle smile, cocked head, direct gaze, and a relaxed posture.

Table 13.1 *Prosodic features known to be used in prosodic constructions*

Pitch features	notably the extent to which the pitch is high, low, wide, narrow, flat, rising, or falling
Intensity	namely, the loudness or quietness of the voice
Timing features	including local variations in the speaking rate and the durations of syllables and of pauses
Voicing features	notably creaky voice, breathy voice, high harmonicity, and falsetto
Other features	including nasalization and phonetic articulation and reduction

Awww-of-Cute Construction

Function: admire a cute baby, etc.

Form:

- **a)** generally fairly flat in pitch
- **b)** small initial pitch hump
- **c)** small final pitch hump
- **d)** high pitch throughout
- **e)** creaky voice throughout
- **f)** nasal throughout
- **g)** loud throughout
- **h)** long duration

Figure 13.1 The Awww-of-Cute Construction

The inclusion of many feature types in the notion of prosodic constructions is important: This makes the notion much more descriptively useful than such earlier notions as intonation contour or tone sequence. Historically it was intonation, that is, pitch phenomena, that received the lion's share of attention in prosody. This is unsurprising, since pitch is the most perceptually salient prosodic property, the easiest to measure, the easiest to visualize, and the easiest to describe symbolically. Yet it is easy to see that intonation-only accounts are often inadequate.

As a first example, consider the prosodic construction used in English to get attention or to cue action, as in *excuse me*, in *peek-a-boo*, in *knock-knock* as the prefix to a knock-knock joke, and when used to call a distant person by name. The most salient prosodic feature is an abrupt drop in pitch, stereotypically three semitones, from which this construction takes its name: the Minor Third Construction. But much more is involved. This was shown by Day-O'Connell (2013), who had subjects produce phrases in two ways. For example, they produced *dinner* either as a call to come and eat, or as a word in a declarative statement. Systematic comparison across a broad set of phonetic features revealed many robust differences. The attention-getting and action-cueing renditions not only included the downstep but were also louder, flatter in pitch both before and after the pitch drop, longer both before and after the pitch drop, higher in harmonicity, and higher overall in the speaker's pitch range. These features are not accidental correlates but essential components of this construction, as seen by the fact that similar downsteps, when appearing with different configurations of other features, can convey different meanings. For example, the prosody of apologies, as might occur with *I'm sorry*, shares a downstep but tends to have slightly creaky, rather than harmonic, voicing, to have a very long post-downstep syllable, to have less strict pitch flattening, to be less high in the speaker's range, and to be quieter. Pitch downslopes are also found in curses, such as *screw you*, and positive assessments, such as *good job*, but these forms serving these functions are also distinguishable thanks to co-occurring non-intonational prosodic features (Niebuhr 2015; Ward 2019).

A second example is uptalk, in which statements end with a rising pitch. Considering intonation alone, the differences from questions are subtle and variable (Ritchart & Arvaniti 2014). However, looking beyond pitch, there is often a clear difference: Uptalk is frequently breathy (Ward et al. 2022). Functionally, utterances with uptalk are not a mere dialectal variant form of statements; rather, they are typically employed in a process of establishing common ground, regarding what to talk about or what to call it. Thus uptalk also may be considered a prosodic construction.

Both grammatical constructions and prosodic constructions are built from components, but for prosodic constructions these are not words and structures, but prosodic features.

13.3 A Prosodic Construction May Be a Joint Construction

Some prosodic constructions involve behavior by both speakers. That is to say, the components of a prosodic construction can include contributions from either speaker or potentially more than two, in multiparty dialogue. For example, English has an Enthusiastic Overlap Construction, in which both speakers are active at the same time, speaking loudly, using wide pitch range, and having a slight tendency to elevated pitch. Speakers 'perform' this joint construction together to mark various kinds of shared feeling, including commiseration, appreciation, and amusement, as in shared laughter.

Another example is the Backchanneling Construction, diagrammed in Figure 13.2, which is commonly used by interlocutors both to mark the transition from one chunk of information to the next and to display their intent to continue in their current roles as speaker and listener.

While the words spoken in dialogue may reflect joint projects, as seen for example in question–answer pairs, in co-construction, and in repair sequences, it is not yet clear whether it is appropriate to analyze such behaviors in terms of joint grammatical constructions. For prosody, in contrast, there are several types of behavior which are clearly best described as instantiating joint prosodic constructions, including not only enthusiastic overlaps, but also turn exchanges, backchanneling, and response cueing (Ward 2019, 2020).

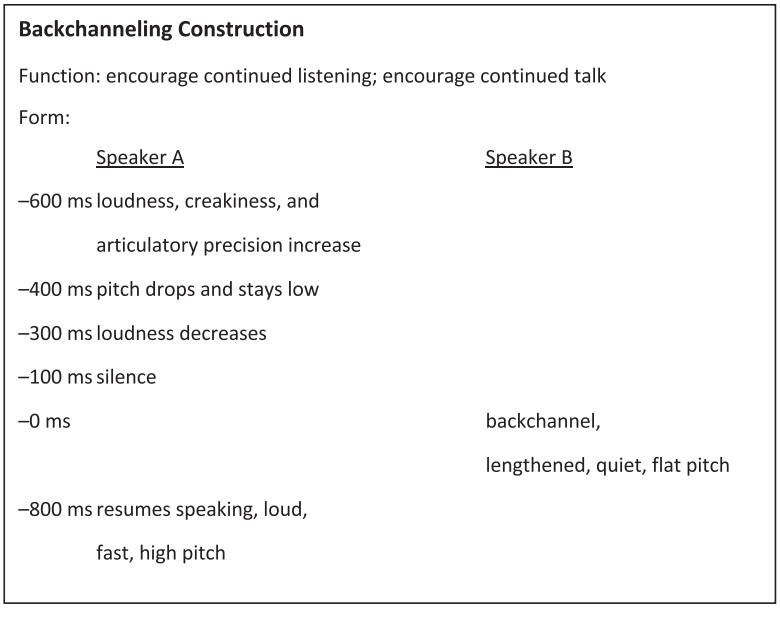

Figure 13.2 Approximate temporal domains of influence of the components of the Backchanneling Construction (adapted from Ward (2019)
Prosodic Patterns in English Conversation, by N. G. Ward. Copyright 2019 by Cambridge University Press. Reproduced by permission of Cambridge University Press

13.4 A Prosodic Construction Is a Temporal Configuration

Consider the prosody of positive assessment, as it might occur when praising someone with the phrase *good job*. Figure 13.3 shows this as a gestural score, in the style of articulatory phonology. Laying out the components along a timeline illustrates that this is not just an unstructured collection of features: The ordering matters. This was confirmed in an experiment that elicited judgments of different stimuli in terms of how positive they sound (Ward & Jodoin 2019). Neutral stimuli were manipulated in two ways, either to increase the pitch and duration everywhere or to increase the pitch of only the first syllable and the duration of only the second. The latter forms, that is, those where the temporal configuration was present, were judged more positive.

Components of prosodic constructions have typical durations, as suggested by the figure, but these are not fixed. Among other factors, these can depend on the lexical content on which the prosody is realized. For example, if the second part of this construction aligns with more syllables, as when the Positive Assessment Construction is used with the word *excellent* to express praise, the duration increase may affect both of the last two syllables. For longer phrases, such as *that was really good*, the prosodic construction can align in different places, with the high pitch falling variously on *that*, *really*, or just the first syllable of *really*, and in each case the domain of lengthening and increased volume applies to the following syllable.

It is worth noting that prosodic constructions vary greatly in their time scales. The examples in this chapter are mostly of prosodic constructions that typically span just a few words, as these make for convenient illustrations. However, the time spans of prosodic constructions can be much longer or much shorter. For example, someone with a lot to say can employ the Turn-Holding Construction over tens of seconds: This involves greater than average loudness, fairly careful articulation, narrow pitch range at the start and the end, and an overall slow drop in pitch (declination). At the other extreme, the Late Peak Construction, used to mark suggestion and many other functions, operates over just a syllable or two, with the signature property being the occurrence of a pitch peak on the order of 80 milliseconds after the intensity

Figure 13.3 Approximate temporal domains of influence of the components in an instance of the Positive Assessment Construction, with times in milliseconds

peak of a stressed syllable, rather than occurring closely aligned with it, the default position (Ward 2018).

The fact that prosodic constructions have associated time courses is an important differentiator that sets them off from two other realms of prosodic function. On the one hand, this contrasts with the uses of prosody in paralinguistics, where the prosodic properties tend to be ongoing. For example, someone who is old may have pervasively creaky voice and someone who is sad may have low intensity and slow speech as long as the feeling lasts. In contrast, in prosodic constructions the component features appear for limited times and their temporal specifications are interlinked. On the other hand, the temporal structure of prosodic constructions contrasts with that of the unit-related functions of prosody, for example, when syllable-bound prosody marks lexical stress or identifies a tone. In such phonological roles, prosodic features are fairly closely linked to the temporal span of a syllable, word, or phrase. While unit-linked prosody can also involve complex configurations of prosodic features (Landgraf 2014; Niebuhr 2019), the temporal properties of pragmatics-serving prosodic forms generally involve more flexibility and complexity in how they align with syllables and lexical units.

Both grammatical constructions and prosodic constructions involve sequentiality, but for grammatical constructions these are just linear sequences of words and other constructions, whereas for prosodic constructions the time axis is involved in a more complex way, with overlaps of features being quite common. There is also complexity in the processes by which the time axis is stretched or compressed, for example in order to fit a complex intonation contour onto just a word or two, or, in other cases, to truncate it (Torreira & Grice 2018).

13.5 A Prosodic Construction Is a Form–Function Mapping

By definition, a construction is a form that serves a function. Importantly, prosodic constructions embody *direct* form–function mappings. In this, a construction-based approach departs from many previous approaches to prosodic phenomena. In particular, it stands in contrast to approaches that postulate symbol-level or phonological descriptions of prosody, such as H!H% or L*H% (Ladd 2008), to mediate between, on the one hand, phonetically accurate descriptions and, on the other, descriptions of meaning. There are at least two practical advantages of description in terms of prosodic constructions over descriptions in terms of symbol sequences. First, they encourage observation and accurate description of the details of phonetic form. Second, modeling in terms of direct form–function mappings avoids the difficult or impossible task of devising a finite set of symbols to represent all the diverse components of meaning-bearing prosodic configurations. But it must be acknowledged that the advantages are not all on one side and, in any case, the enterprise of modeling pragmatics-related prosody comes with intrinsic issues that are challenging for any methodology (Niebuhr & Ward 2018).

It is worth noting that prosodic constructions vary greatly both in their forms and in the sorts of functions they serve. One important dimension of variation is from specific to general. At one extreme, the Awww-of-Cute Construction is only used when admiring baby animals and only in specific situations. Correspondingly, its prosody is almost fully specified. At the other extreme, the meaning of the Late Peak Construction is quite diffuse: It serves at least twenty-four functions, including making suggestions, marking incredulity, and correcting misconceptions. While these do bear family resemblances to each other, it is hard to characterize them as subtypes of any single meaning. Its prosodic form is correspondingly underspecified: This construction only specifies things about pitch height and intensity, with every other aspect of the realization left free to be determined by other, superimposed constructions. Towards the middle of the continuum are constructions like the Positive Assessment Construction. While this does seem to have one overarching meaning, in any specific utterance it commonly resolves to a more specific type of positive assessment, such as admiration, as with *she dresses so cute*, approval, as with *you got it*, appreciation, as with *thank you*, encouragement, praise, flattery, and so on.

Both grammatical constructions and prosodic constructions represent direct form–function mappings. Both grammatical constructions and prosodic constructions vary in the level of specificity of the meanings conveyed. However, it is possible that the functions of prosodic constructions more often relate to pragmatic and interactional intents (Couper-Kuhlen & Selting 2018), while grammatical constructions relate more often to semantics.

13.6 A Prosodic Construction Can Have Specific Contexts of Use

Consider again the Awww-of-Cute Construction. This is appropriate only in certain contexts. It would be strange, for example, to say it when watching a baby on television, or to comment on a baby who's actively playing, or for a baby that is your child or that you're caring for, or for a baby that you're reaching to pick up. Rather, this construction is prototypically appropriate when the baby is with her mother, when you're interacting with the mother and have already a joint focus of attention on the baby, when the baby is asleep or otherwise quiet, when your intention is to admire the baby from a distance, without bothering it or taking it away from the mother, and when you are female. Of course these are not strict requirements; for example, people may say *awww* when someone is showing a picture of their grandbaby, or of a sleeping puppy or kitten.

The more general prosodic constructions also have constraints on their context of use, although these tend to be less restrictive. For example, the Backchanneling Construction is most appropriate only after a conversation is well established, with the participants having settled on a topic and established for the moment who has the floor.

Both grammatical constructions and prosodic constructions have context dependencies. While context dependencies are often less important for grammatical constructions occurring in written language, in dialogue they are very relevant for constructions of both types (see also Chapters 12 and 14).

13.7 A Prosodic Construction Can Be Combined with Other Constructions

Consider calling someone by name to get their attention and warn them of danger, as in

Su–
san

This often involves two superimposed constructions: the Minor Third Construction and the Late Peak Construction. Both contribute elements of meaning: The Minor Third Construction calls for her attention and the Late Peak Construction calls for her to infer something. Thus, for example, if Susan is a child moving towards water that is too deep for her, this combination can cue her both to infer the danger and to display awareness of it. The two constructions also both contribute elements of the form. Indeed, these two mesh very well, as the Late Peak Construction's need for a pitch peak on a long syllable is neatly satisfied by the Minor Third Construction's specification for a second syllable that is long, loud, and relatively high in the speaker's pitch range. Figure 13.4 illustrates how the pitch specifications of these two constructions can add together to determine the pitch contour: a downstep plus a final upturn. Figure 13.5 shows the same process in terms of the pitch height gestural scores.

Superposition is not rare: People in conversation are usually trying to accomplish many communicative goals simultaneously, and so most utterances exhibit multiple superimposed prosodic constructions.

Both grammatical constructions and prosodic constructions typically occur in combination. However, for grammatical constructions the alignment and licensing constraints can be very strict, at least in the written language, as seen by the popularity of unification-based modeling in accounts of how the constructions of a sentence interrelate (see Chapters 2 and 10). In contrast, the combination of

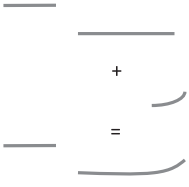

Figure 13.4 Pitch Contour Superposition (from Ward 2019)
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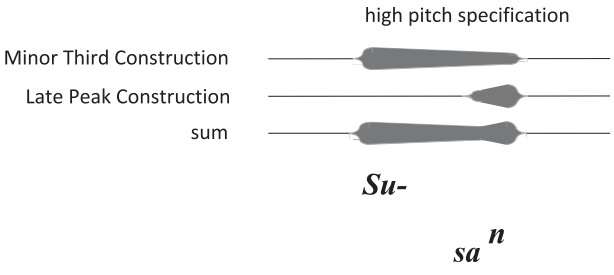

Figure 13.5 Prosodic Gesture Superposition (adapted from Ward 2019)
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prosodic constructions appears to be more flexible, with the superimposed constructions not necessarily much constraining each other. This is possible due to the multi-dimensional nature of prosody: For example, a syllable can be simultaneously flat, loud, breathy, nasal, and many other things, and these various properties can be governed by different constructions.

13.8 A Prosodic Construction Can Inherit from Other Constructions

Consider again the Awww-of-Cute Construction. While it has its own meaning, it shares aspects of that meaning with other constructions, and these seem to be inherited from more abstract form–function mappings. One of these is the general use in English of creaky voice for indicating distance of some sort. This meaning element is also present in Awww-of-Cute, in that one can appropriately use *awww* only for a baby at some physical and social distance. The Awww-of-Cute construction also inherits from the general mapping between nasal voice and appealing to shared knowledge: It is appropriate when others are around and when you assume that your evaluation of the baby is generally shared.

Constructions may also have 'sisters' in the network organizations of constructions (for details on networks and inheritance, see Chapter 9). For example, the Awww-of-Cute construction shares much with the *awww* of spectators at a missed goal, including most of the prosodic features except the final pitch hump, and some elements of the function, namely, conveying a feeling that is deep, shared, evaluative, and triggered by a visual sensation, and indicating the intent only to keep watching.

Inheritance relations can be fairly complex. Consider the I'm Good Construction, used to politely decline an offer, as when responding to *more cake?* with *I'm good*. This inherits from three other constructions: the Late Peak Construction, the Minor Third Construction, and the Positive Assessment Construction. The inherited functions are, respectively, expressing politeness, cuing a next action (whatever comes next in the dessert sharing ritual), and

showing appreciation for the offer. The inherited prosodic components include, respectively, a late peak, a pitch downstep, and harmonicity. The I'm Good Construction appeared, at least in El Paso, only about ten years ago and may be an example of a creative lexico-prosodic combination by one speaker that became a conventionalized part of American English.

Thus both grammatical constructions and prosodic constructions can inherit both form and function from other constructions.

13.9 A Prosodic Construction Can Be Present to a Greater or Lesser Extent

Consider again the Positive Assessment Construction, for example as used with *good job* to praise a student. When the praise is stronger, the prosodic components of the construction are more strongly present. This is confirmed by experiment: When stimuli were created with the pitch height and duration components progressively increased, the samples with the stronger prosody were judged to sound more positive (Ward & Jodoin 2019). People are very sensitive to such shades of meaning: Most subjects were able to distinguish eight levels of prosodic positivity. Similar results were found with stimuli manipulated to match the prosody of the Contrast Construction more or less closely (Kurumada et al. 2012). While some approaches to prosody model it in terms of symbols, every prosodic construction examined so far seems to be essentially a gradient phenomenon.

For constructions with many components, such as the Minor Third Construction, speakers may omit or modify a few components, such as the lengthening, the harmonicity, or the height relative to the speaker's pitch range. Such variant productions generally convey the same meaning, but more weakly (Ward 2019).

Timings may also vary from the prototype. For example, consider again the Backchanneling Construction. While this, like other turn-taking constructions (Levinson & Torreira 2015), seems to have a prototypical timing for its components, roughly as depicted in Figure 13.6, this varies from instance to

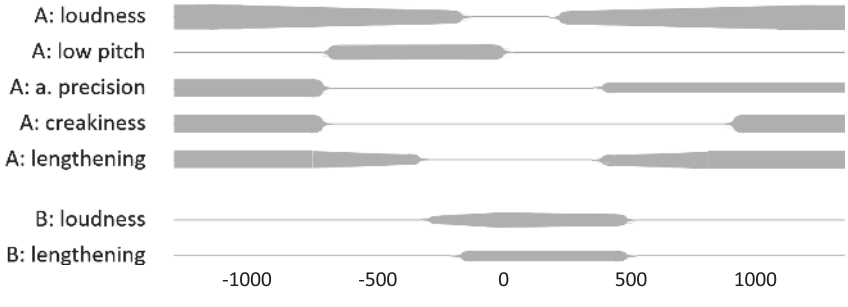

Figure 13.6 Approximate temporal domains of influence of the components in the Backchanneling Construction, as a gestural score; A and B are the two speakers; 'a. precision' refers to articulatory precision.

instance. For example, the position of the backchannel may vary. While it most typically occurs in the clear, during a pause by the other speaker, it may overlap the previous utterance or overlap the continuation. The other speaker's behavior may also vary, making a long pause, a short one, or none at all. These variations relate to many factors, including the listener's cognitive processing rate and the precise communicative intents of the speaker and listener. In cases where the deviation is moderate, the construction's function may still be served, although more weakly. In other cases, where the timing is really off, or the backchannel or the continuation is missing, or the prosody is infelicitous, the behavior may be seen as resembling this construction, but too far from the prototype to really instantiate it at all.

In general, it seems that occurrences which more closely match the prototype for a construction tend to more strongly convey the meaning of that construction, although other factors are also involved (Cangemi & Niebuhr 2018).

In any given sentence, a grammatical construction is either present or absent, but a prosodic construction can be present to a greater or lesser extent.

13.10 Summary

Figure 13.7 summarizes the key elements of the notion of prosodic construction. Overall it can be seen as a close analog of the notion of grammatical construction. To recap the similarities and differences:

a) While the components of grammatical constructions are words and the like (morphemes, words, word classes, larger morphological or syntactic constituents), for prosodic constructions the components are prosodic features.
b) While in grammatical constructions the temporal relations among components are usually just sequencing, in prosodic constructions the temporal configurations can be complex.

A prosodic construction:

a) is a set of prosodic features,
b) in a specific temporal configuration,
c) with a meaning,
d) that is used in certain contexts,
e) that can be present to a greater or lesser degree,
f) that can appear superimposed with other form-meaning mappings,
g) that can inherit aspects of form and meaning from other constructions, and
h) that may include behaviors by both speakers.

Figure 13.7 Essential properties of prosodic constructions

c) Both grammatical constructions and prosodic constructions are direct form–function mappings. However, it seems that grammatical constructions more often serve semantic functions, whereas prosodic constructions more often serve pragmatic and interactional functions.
d) Both grammatical constructions and prosodic constructions have associated contexts of use.
e) While any grammatical construction is generally either present or absent in a text, a prosodic construction may be present to a greater or lesser degree.
f) Both grammatical constructions and prosodic constructions usually appear in combination with other constructions. However, the basic combining principle for grammatical constructions may be some form of unification, but for prosodic constructions it is superposition.
g) Both grammatical constructions and prosodic constructions may inherit properties, of both form and function, from other constructions.
h) Both grammatical constructions and prosodic constructions may involve contributions by both speakers, but so far, the details of this have been worked out only for prosodic constructions.

Overall the two notions are highly compatible: Prosodic constructions and grammatical constructions are in essence the same. The added possibilities and complexities of prosodic constructions are easy to understand as due to the nature of spoken dialogue versus text. These include not only the frequently discussed factors that relate to the nature of interacting with others and to the nature of actions in time (e.g., Fried & Östman 2005; Brône & Zima 2014; also Chapters 12 and 14, this volume), but also factors relating to the nature of sound as a medium.

At the same time, to properly handle prosody requires more than just adding a slot to some standard formalism to mention 'prosodic correlates'. As we have seen, accurate modeling of prosodic constructions and, presumably, also prosody-involving grammatical constructions, is more complicated.

13.11 Methodological Implications

The findings of work on prosodic constructions are relevant for at least two research programs.

The first research program is that of improving the accuracy of descriptions of (mostly) grammatical constructions (e.g., Gras & Elvira-Garcia 2021). For this, the take-home lesson is the diversity of prosodic features involved in constructions and, as a corollary, the frequent inadequacy of phonological descriptions. For example, while it is a reasonable first approximation to note that the Let Alone Construction may involve marking some words as 'prosodically prominent', as in *I barely got up in time to EAT LUNCH, let alone COOK BREAKFAST* (Fillmore et al. 1988), the reality is likely more complex. Today we have resources that can help (for example a trivial search for *let alone* on

Youglish.com yields 5429 spoken examples) and recent years have seen many insightful discussions of the prosody of grammatical constructions (such as Poldvere & Paradis 2020; Lehmann In press), but accurate characterization is still difficult. In particular, we as researchers are hampered by our perceptual limitations. While it is easy to swiftly recognize and react to prosodically conveyed information without conscious effort when engaged in dialogue, to explicitly perceive and discuss prosody is difficult. This is true even for the most salient prosodic features (notably pitch) and the most convenient descriptive terms (stress, prominence, rise, fall, L*H, and the like). Fortunately, there are now tools that can aid perception and also resources to help non-phonetician researchers learn how to more comprehensively and more accurately describe prosody, even the complex forms common in real dialogue (e.g., Szczepek Reed 2010; Benus 2021). At the same time, Construction Grammar researchers do not always need to start from scratch, as the prosodic components of many constructions may already have been inventoried (Ward 2019). For example, it is likely that the prosody of the Let Alone Construction is largely inherited from two prosodic constructions: the Contrast Construction and the Bipartite Construction.

The second research program is that of categorizing the prosody of various pragmatic functions. While so far few researchers in prosody or pragmatics have chosen to describe their findings in terms of constructions, there are advantages to doing so. Working within this framework imposes no specific constraints, yet guides researchers to study and describe meaningful prosody in ways that have previously been very productive. In particular, adopting this framework can liberate researchers from the constraints that come from respecting postulated intermediate phonological layers, and instead allow them to look for direct form–function mappings; moreover, it can encourage researchers to transcend the limits of mere correlational work – such as itemizing the individual prosodic features that correlate with anger, irony, and so on – to seek, instead, the actual patterns involved.

13.12 Potential Applications

Today some speech synthesizers can take any sentence from any Wikipedia article and render it more intelligibly and pleasingly than most human speakers can. Yet none can synthesize sentences that convincingly convey pragmatic intents (Marge et al. 2022). People have become used to this: Unexpressive voices have become the norm for spoken dialogue systems, but it does not have to be this way, and users would almost certainly prefer systems that are more communicative. The spectacular improvements in speech technology over the past decades have been largely due to two factors: machine learning using large datasets and abandoning mediating symbolic representations to use instead direct mappings from the speech signal to the categories of interest (Shriberg & Stolcke 2004). Prosodic constructions represent direct form–meaning

mappings and as such are potentially very compatible with direct, learning-based approaches. They may thus provide an avenue for adding pragmatic competence to speech synthesizers.

Today many people suffer in social interactions due to prosody-related communicative impairments. For learners of foreign languages, constructions have great promise in language teaching. So far this has been explored mostly for the grammatical aspects of language (Boas 2022, also Chapter 23 in this volume). Speech raises new challenges (Gilquin 2022), where construction-based approaches may also be useful, especially for prosody, which for many language learners is a major challenge. Current teaching methods can be problematic, as they may, for example, require learners to memorize arbitrary partial descriptions, such as 'high rising', and then to memorize how they are supposed to sound and to memorize the meanings they are supposed to associate with. My own experiences as a guest instructor for learners of English suggest that lessons organized around prosodic constructions can be effective. These can be grounded in highly memorable examples that illustrate specific things native speakers do in specific situations, and augmented with examples illustrating the range of typical uses, some concise explanation, and lots of pairwork and feedback. With such scaffolding, learners may be able to readily learn to recognize and use constructions. Similarly, teaching in terms of constructions may help people become more aware of how prosody varies across dialects and social groups and thereby help reduce unnecessary misunderstandings. Another population that could benefit are native speakers whose mastery of prosody is incomplete or inadequate for some purposes. Nowadays, people wanting to be more charismatic, or people with autism wishing to overcome social handicaps, are often coached to change superficial prosodic properties, for example, their average pitch height, pitch range, or volume. However, a focus on prosodic constructions, the prosodic elements that are actually the most communicatively relevant, may enable better assessment of skills and more meaningful interventions.

13.13 Research Questions

While the prospects for applications are bright, complete success will require more work on basic questions of prosody representation and processing. These include some basic questions about constructions, including:

- To what extent are prosody and grammar independent domains? There are certainly times where prosody conveys meaning by itself. For example, the Minor Third Construction can be effective with no lexical content at all, for instance when produced on *unh-uh* to warn off a toddler reaching for the cookie jar. Another type of independence is seen when the prosody and the words can convey contradictory meanings, for example in sarcasm. Yet, strong claims about independence may be overstating the case (Imo & Lanwer 2020).

- What does the network of constructions actually look like? The complete picture must reflect the ways in which constructions inherit not only elements of grammatical form but also prosodic form, as well as modeling relations with sister and competitor constructions in both domains.
- How are the prosodic aspects of constructions best described? This chapter has presented the prosody of constructions by listing the features involved and sometimes their temporal extents. While such descriptions suffice for evoking the typical prosody for human readers, they are selective and imprecise. Fully quantitative, rich descriptions (Ward 2019) are probably more accurate and more useful for many applications, but they sacrifice readability. Further investigation and development is needed.
- What are the processes by which constructions align with each other? We know some things about how prosodic constructions may warp and adjust to align and combine with other constructions, either prosodic or grammatical (Torreira & Grice 2018; Vigario et al. 2019), but we need predictive models of these processes.
- How do the prosodic and grammatical aspects of constructions actually relate? We can conclude that the notions of prosodic construction and grammatical construction are overall quite compatible. However, so far, every published description of a construction has focused on either the grammatical domain or the prosodic domain, including at best a few observations regarding the other. As a priority, we need a full description of at least one construction in its entirety. Only after a few such studies will we be ready to work towards a unified understanding, through theory development and comprehensive modeling (Ziem 2017). That will, in turn, enable us to realize the full potential of constructions for both research and applications.

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