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Syllables in TİD*

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ABSTRACT: We have two aims in this paper. Our first aim is to show that syllables exist in TİD prosody (Türk İşaret Dili – Turkish Sign Language). A specific domain in prosody is substantiated only if there are phonological phenomena that refer to that domain as part of their definition. Therefore, for our first aim, we present evidence from phonological phenomena which need to refer to the notion syllable in their definition. As for these phenomena, we present Fingerspelling of one-handed suffixes which are restricted to a single syllable size in their lexicalized form. We also present some compounds which are reduced to a single syllable size while the lexemes before compounding form separate syllables. Next, as a case of phonological fusion, Coalescence will be shown to be limited to a single syllable size. These three phonological phenomena are domain processes which, to be defined, need the entire domain of syllable. We also show two phonological phenomena that need to refer to the edges of a syllable. These are Metathesis and Backwards Signing in both of which the order of the initial and final edges of the syllable are reversed. To support the existence of a prosodic domain, it is important to show that the specific prosodic domain is independent - it is not isomorphic to a morphological or a syntactic domain (Nespor and Vogel, 2007). Therefore, our second goal is to show that syllables are independent of two other units in grammar - Morpheme and Sign - by illustrating differences between them. We finish this paper by summary and indicating potential topics of study.

Keywords: TİD, Syllable, Compound, Coalescence, Fingerspelling, Metathesis, Backwards Signing, Sign, Morpheme

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TİD'de Hece

ÖZ: Bu makalenin iki amacı var. Birinci amaç, Türk İşaret Dili (TİD) ezgisinde Hecenin varlığını göstermek. Ezgisel bir gruplamanın varlığı, ancak tanımında bu gruplamanın kullanıldığı sesbilimsel bir olay var olduğu zaman kanıtlanmış olur. Bu ölçütten yola çıkarak, makalenin birinci amacını gerçekleştirmek, yani hecenin varlığını ispatlamak için, sesbilimsel olaylardan kanıtlar sunuyoruz. Bu olayların tanımında heceden söz etmek gerekir. Bu sesbilimsel olaylardan ilki, ödünç alınmış ve tek elle harflenen iki yapım ekinin TİD'e uyarlamış şeklinin hece boyutuna sığdırılmasıdır. İkincisi, bileşenleri tek tek iki hece oluşturmasına rağmen bazı bileşik işaretlerin hece sayısının bir hece ile sınırlandırılmasıdır. Üçüncüsü, hece sayısı bir ile sınırlı olan İç-İçe Geçme olayıdır. Bu üç sesbilimsel olay tüm hece alanını kapsamaktadır ve tanımlanabilmek için hece kavramını içermek zorundadır. Ayrıca, hecenin iki ucundan bahsederek tanımlanması gereken iki sesbilimsel olay sunuyoruz. Bunlar Göçüşme ve Geriye İşaretlemedir. Bir ezgisel gruplamanın bağımsız olarak var olduğunu göstermek için, bu gruplamanın Biçimbilim veya Sözdizimdeki başka ilgili gruplamalardan farklı olduğunu göstermek gerekir (Nespor ve Vogel, 2007). Bu amaçla, bitirmeden önce, hecenin Dilbilgisindeki ilgili iki gruplama olan Biçimbirim ve İşaretten farklı bir gruplama olduğunu gösteriyoruz. Son bölümde makaleyi özetleyip, hece ile ilgili gelecekte yapılabilecek çalışmalara değiniyoruz.

Anahtar Sözcükler: TİD, Hece, Bileşik Kelime, İç-içe Geçme, Parmakla-Harfleme, Göçüşme, Geriye İşaretleme, İşaret, Anlambirim

1 Introduction

A sign is composed of a handshape, a (phonetic[1]) movement, location and orientation (Stokoe, 1960; Battison, 1978; Wilbur, 1987). Different models of sign language phonology treat these parameters in different ways. For instance, Sandler (1989) proposes that handshape together with selected fingers forms an autosegmental tier called Hand Configuration which spans over the first Location, Movement in between and the last Location of a sign. Her model is named Hand-Tier Model, also known as the Location-Movement-Location, LML Model. According to Sandler's model, a canonical sign, which usually corresponds to a canonical syllable, has three timing units each of which is associated to each of the LML. According to another model, which is Brentari's (1998) Prosodic Model, a sign's phonology is composed of Inherent Features and Prosodic Features. Inherent features are those

[1] We need to indicate 'phonetic' in parenthesis since we will show in Section 5 that some signs do not have an underlying phonological (lexical) movement. Nonetheless, to be phonetically well-formed such underlyingly movementless signs acquire an epenthetic movement in phonetics.

features which do not change during the articulation of a sign such as major location (place of articulation of a sign), and the manual and nonmanual articulators while Prosodic Features are those features which change during the articulation of a sign such as Setting in a major location, Orientation and Aperture. According to the Prosodic Model, there are only two timing units in a single syllable sign. The prosodic features of a sign change from the first timing unit to the second. In this paper, we adopt Brentari's model since evidence from Backwards Signing supports her model as we will see in Section 4.

This being noted, we will not discuss these models in much detail. The reader is referred to the original work of these authors and Kubus (2008) for examples of application of the models to TİD. What we will mainly adopt out of these two models and a few others is the consensus that the movement of a sign forms a syllable (Sandler, 1989; Brentari, 1998; van der Kooij, 2002; Jantunnen, 2006; Wilbur, 2011). If a single movement type occurs on its own, the resulting syllable is said to be simple and if two movement types (one proximal, one distal), occur together within the same syllable, it is said that the resulting syllable is heavy. We will introduce how simple and heavy syllables are articulated in Section 2. Section 3 will be on domain processes that are restricted to occur within a syllable. Section 4 is on edge processes whose definition needs to refer to the edges of a syllable. By Sections 3 and 4, we will have shown phonological processes which need the notion syllable in their definition. Section 5 is on differences between syllables, morphemes and signs since, to support the existence of a prosodic domain, it is important to also show that the specific prosodic domain is independent of - it is not isomorphic to - a morphological or a syntactic domain (Nespor and Vogel, 2007). Section 6 is the summary.

2 Articulation of a Syllable

Now we will describe three ways, i.e. three movement types, to produce a simple syllable in TİD[2]. First, a syllable occurs when the fingers move from one degree of opening to another. This is known as an aperture change (Brentari, 1998). A sign syllable that results from an aperture change from open to closed fingers is illustrated with the sign MANY in TİD below.

[2] There are, of course, some other ways to articulate signs which may or may not be constrained by a syllable size, such as wiggle as a manner of movement. I leave such manners of movement outside the scope of this paper.

Figure 1: MANY, sign syllable with aperture change movement

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

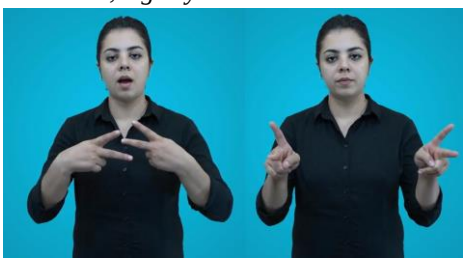
There are five major locations where a sign can be articulated (Battison, 1978). These are the major body areas, head, torso, arms and the non-dominant hand as well as the space in front of the signer. There are more specific settings within these major locations. For instance, each cheek is a setting within the head major location. Above, for MANY, we said that a sign syllable occurs when the fingers move from one degree of opening to another. A sign syllable can also occur when the hand(s) move(s) from one setting to another in a major location. This is called a setting change (Brentari, 1998). The sign MATERNAL-AUNT illustrates a sign syllable produced with a setting change movement.

Figure 2: MATERNAL-AUNT*, sign syllable with a setting change movement*

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

An orientation is the facing of the palm and the fingertips. A syllable is formed when the orientation of a sign changes. Below, the orientation of the sign FORGIVE changes from the palm facing the body to the palm facing the neutral space.

Figure 3: FORGIVE*, sign syllable with an orientation change*



Source: http://tidsozluk.net/tr/Affetmek?d=0967

According to Brentari (1998), the joints that are closer to the body, which are called 'proximal joints', produce relatively more sonorous movements because they make larger and thus visually more salient movements than the joints that are further away from the body which are called 'distal joints'. During the articulation of a sign, a more distal movement may be accompanied by a more proximal movement. The distal and the only movement in MANY in Figure 1 above is used to go from an open handshape to a closed handshape.

It is possible for such a distal, handshape-changing movement to occur simultaneously with a proximal movement. When these two movement types occur together, a 'heavy syllable' occurs with respect to syllable weight rather than a 'light' syllable. The sign LOSE below is articulated with a proximal setting change movement where the two hands start together in the neutral space in front of the signer's torso and move away from each other to a distance parallel to the shoulders. During the setting change movement, a simultaneous distal movement occurs which implements a handshape change from an open hand configuration where the corresponding fingertips of the two hands touch each other to a closed handshape.

Figure 4: LOSE*, heavy syllable, proximal and distal movement together*

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

We have seen in this section that a movement is obligatory for the definition of a syllable in TİD. When a movement type occurs on its own as a setting,

aperture, or orientation change movement, a simple syllable results. When two movement types, one of which is more proximal and one more distal, occur together there is still a single syllable, but this syllable is a heavy syllable now. After this short introduction to the articulation of a syllable in TİD, we will next discuss three domain span processes that need to refer to syllable in their definition.

3 Domain Span Processes That Are Restricted to Occur Within a Syllable

According to Nespor and Vogel (2007), a domain span process is one which occurs within the domain of a prosodic constituent. The following three rules - Nativization of Fingerspelling in Section 3.1, Compound Formation in Section 3.2 and Coalescence in Section 3.3 - need to refer to the domain span of the prosodic constituent syllable to be defined.

3.1 Nativization of Fingerspelling

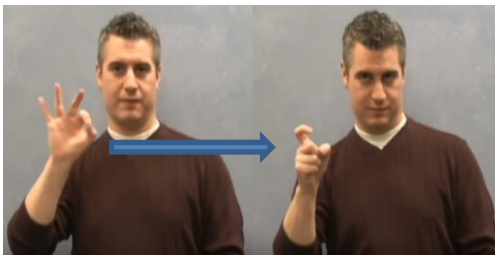
It has been argued for ASL that ideally one syllable - and maximally two syllables - is the relevant prosodic level for constraining the phonological nativization of fingerspelled borrowed signs (Brentari, 1994). When the individual letters of a fingerspelled word from English are articulated in ASL (such as F-I-X[3]), a transitional/epenthetic movement occurs for each letter in the borrowed word.

Figure 5: Fingerspelled F-I-X; each letter is fingerspelled

[3] F-I-X: the hyphens in between letters mean that each letter is articulated separately by the help of an epenthetic movement. #FIX: the hatch mark means that the borrowed form is now added to the lexicon of the language - it is nativized. Some letters may have been dropped in this process.

However, when a fingerspelled loan word becomes part of the ASL lexicon, i.e. when it is phonologically nativized, some of the letters are dropped - for only F-X to remain in the case of #FIX - and the transition between the remaining letters are made smoother to yield a handshape change and often a path movement.

Figure 6: Lexicalized #FIX: only F and X are spelled. A handshape change and a slight path movement occur between the first handshape and the second handshape



Source: https://www.youtube.com/watch?v=fANpVf2s6cE
(Time in Video: 00:00:50)

The signs resulting from such phonological nativization are produced as monosyllables or a maximum of two syllables in ASL (Brentari, 1994). TİD differs from ASL in that it has a mostly two-handed fingerspelling system (Kubus, 2008; Kubus and Hohenberger, 2011). Due to this difference, nativization from fingerspelling is rare in TİD but it is observed for at least two derivational morphemes borrowed from Turkish (Kubus, 2008), each signed with one handed letters. An example is the associative suffix –LI in Figure 7. Another such suffix is the agentive suffix –CI as in Figure 8.

Figure 7: Fingerspelled associative suffix –LI in TİD

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

Figure 8: Fingerspelled agentive suffix –CI in TİD

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

Note that the borrowed suffixes in Figures 7 and 8 are different from the ASL example, F-I-X → #FIX, in that no letters are dropped during the articulation of these suffixes in TİD. Nonetheless, they are like the ASL example in that the handshape change from the first letter to the second is articulated during a path movement, which is a single syllable size. In other words, the size of nativization of these suffixes is restricted to a single syllable in TİD. Therefore, to define the phonological process that takes place during nativization of these two borrowed suffixes, a syllable needs to be referred to. This is evidence to the existence of syllable in TİD prosody.

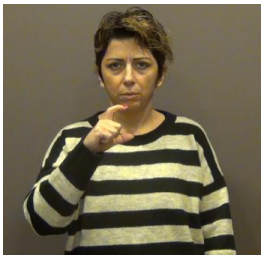
3.2 Compound Formation

Liddell and Johnson (1986) note for ASL that changes in lexicalized compounds from individual signs tend to occur such that the remaining specifications are limited to a single syllable. Similarly, another domain where the notion syllable is required as a prosodic delimiter in TİD is some compounds.

The compound JACKET is formed with the letter C combined with the sign COAT (Taşçı, 2012). The C handshape is superimposed on the movement of COAT, which is from the shoulder setting to the mid torso setting of the major place, body. Although the component lexemes C and COAT are one syllable each, the resulting compound JACKET is restricted to a single syllable size which proves one more time that the prosodic constituent syllable exists in TİD.

Figure 9: The separate lexemes in JACKET *before compounding and the compound form of it*

a. The letter C



(Boğaziçi University, Sign Language Linguistics Laboratory Database)

b. COAT

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

c. The compound JACKET (C^COAT)

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

Some other compounds which are reduced to a single syllable while their component lexemes each have a separate syllable[4] are REMEMBER (HEAD^MEMORY) and ELDER-BROTHER (MAN^TALL) (Kubus, 2008) and WEED (HOLD^CUT) (Taşçı et al., in prep). ELDER-BROTHER (MAN^TALL) is illustrated below.

Figure 10: The compound ELDER-BROTHER (MAN^TALL)

Source: http://tidsozluk.net/tr/Abi,%20A%C4%9Fabey?d=0538

In this section, we have seen that a single syllable is the prosodic size for some compounds in TİD although the component lexemes within these compounds form separate syllables before they combine. This shows that whatever phonological rule is operative in such compound formation, it needs to refer to syllable in its definition.

3.3 Coalescence

Coalescence is the reduction of two phonetic units into one (Sandler 1999). An example is provided by the cliticization of negation below, where the dominant hand of the symmetrical two handed-sign START becomes the host of negation. In its citation form, the sign START is realized as a symmetrical two-handed sign as we show below. As a symmetrical two-handed sign, START satisfies the phonological requirement for coalescence to appear. The example in Figure 12 shows how coalescence is realized. At the beginning of the cliticized form, START^NEG, the sign START is produced by the two hands in the same configuration (as in the citation form). During the downward movement between the two locations of START, the dominant hand changes its shape

[4] The component lexemes are at least separate syllables in phonetics. For instance, the contact of one of the component signs, MAN, in ELDER-BROTHER is due to an epenthetic movement which is used to render the sign phonetically well-formed, but this sign has no lexical/phonological movement. On the other hand, the sign WEED has component lexemes, HOLD and CUT, which both have a lexical phonological movement.

producing the handshape of negation, thus realizing the fused form START^NEG in a single syllable[5].

Figure 11: Citation form of START

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

Figure 12: Coalescence of the verb START and Negation

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

The prosodic size of coalescence is a single syllable. One more time, we witness a phonological process which needs to refer to syllable in its definition. This is the third domain span evidence for the existence of syllable in TİD prosody in addition to the two borrowed suffixes in Section 3.1 and some compounds in Section 3.2. Next, we will discuss two phonological phenomena that need to refer to the edges of a syllable in TİD. These will bring further evidence to the existence of the prosodic constituent syllable in TİD prosody.

[5] According to the Strict Layering Hypothesis of Nespor and Vogel (2007), a Prosodic Word needs to consist of at least a Foot and a Foot at least a Syllable. We have such a case here. This single syllable also forms a Foot, then a Prosodic Word but first it needs to be treated as a Syllable since it includes only a single movement. Foot is not a well-understood phenomenon in TİD but evidence that this single syllable is also a single Prosodic Word comes from nonmanual markers. Here, backward-head-tilt spreads regressively from negation to the host marking the domain of the Prosodic Word. There is also no mouth gesture change between the host and the negative marker which is another marker of a single Prosodic Word (Brentari and Crossley, 2002).

4 Edge Processes That Need to Refer to a Syllable in Their Definitions

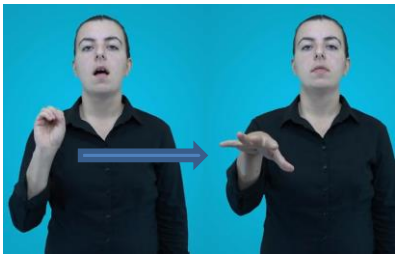
Although edge rules are those phonological rules which usually refer to either the left or the right edge of a prosodic constituent in speech, in the following processes from TİD, it will be shown that both edges of a syllable can be referred to. To our knowledge, there is nothing in the prosodic theory that would ban such operations in principle (Nespor and Vogel, 2007).

4.1 Backwards Signing

We briefly mentioned two models of sign language syllables in Section 1. There, we said that according to Sandler's (1989) model, a syllable is composed of a beginning Location, a Movement and a final Location. According to this model, there are three timing units which are sometimes likened to be associated to a C(onsonant)-V(owel)-C(onsonant) segmental sequence. If each of these timing units can be targeted, during backwards signing, one expects signing a sequence like backwards speech (Cowan *et al.*, 1987). In English, the single syllable word, cat [kæt], is said backwards as [tæk]. This is possible since each of the sounds corresponds to a timing unit here and only the first and the last timing units that correspond to the consonants are reversed for backwards speech leaving the vowel in between intact. If a sign syllable has also three timing units, the same kind of behavior would be expected. If, on the other hand, a sign has only a beginning and ending timing unit and the movement in between is prosodic between these two as in Brentari's (1998) prosodic model, then one expects that the prosodic movement in between will be reversed since it would articulate the timing units from the ending inherent feature to the beginning inherent feature this time.

We will use the sign THROW to test the prediction of these two models. The citation form of this sign is provided in Figure 13.

Figure 13: Citation form of THROW



Source: http://tidsozluk.net/tr/Atmak?d=0207

According to Sandler's (1989) model, the first closed position of the handshape configuration, with all fingers selected, occurs in neutral space in a proximal

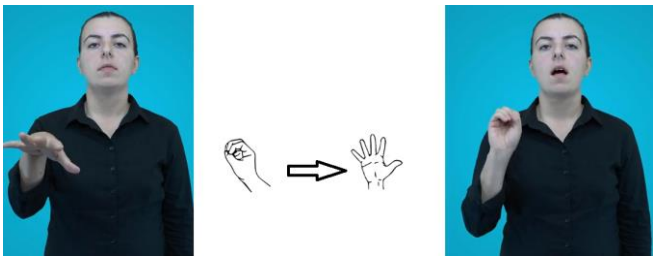
distance from the signer's body. There is a transitional movement[6] in between which changes the position of the fingers from closed to open. Finally, the last position of the handshape configuration, with all fingers selected but this time open, occurs in neutral space in distal distance from the signer's body. Reversing the last location and the first location will result in the following:

Figure 14: The last and first locations reversed for THROW

Adapted from: http://tidsozluk.net/tr/Atmak?d=0207

Following Sandler (1989), if we treat the transition movement as a separate segment consisting of a separate timing unit, it is not possible to articulate this sign from the reversed beginning location to the reversed ending location since the transition movement, as a segment, is defined as movement from a closed handshape to an open handshape.

Figure 15: What is expected to occur, but is impossible, in backwards signing when transition movement is considered as a segment



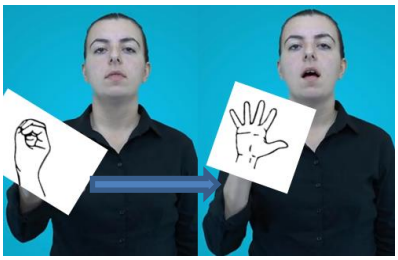
Location Transition Movement Location

One could alternatively argue that, according to Sandler's model, what is segmentally swapped is the locations rather than the finger positions. In that

6 This is an aperture changing movement in Brentari's (1998) model.

case, what is expected is the following backwards signing. However, this kind of backwards signing is not valid in TİD.

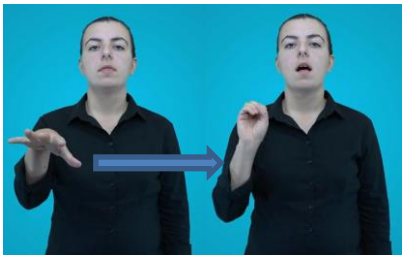
Figure 16: An alternative prediction for backwards signing under Sandler's model



Adapted from: http://tidsozluk.net/tr/Atmak?d=0207

According to Brentari's (1998) model, since movement is not defined as a segment but a prosodic feature that articulates the change from the first timing unit to the second timing unit, this model is able explain the movement in backwards signing which is shown in Figure 17.

Figure 17: The correct form of backwards signing for THROW



Adapted from: http://tidsozluk.net/tr/Atmak?d=0207

In addition to helping to choose Prosodic model over the LML model, the correct form of backwards signing shows that the edges of a syllable need to be referred to for one to define this phonological process[7]. This requirement further strengthens our proposal for the existence of syllable in TİD. In the following subsection, we will discuss Metathesis which is another process whose definition needs to refer to the edges of a syllable.

[7] The same behavior is observed for ASL (Wilbur and Petersen, 1997).

4.2 Contact Metathesis

Contact metathesis, which is the reversal of the initial and final contacts of a contact sign, is yet another phonological process that is defined by referring to the edges of a syllable in TİD. As in ASL (Kegl and Wilbur, 1976; Sandler, 1986; Wilbur, 1987), only those signs that have a defining initial and final contact at the beginning and end of the syllabic movement undergo this process in TİD. Our initial observation is that at least one sign, MOTHER, in Figure 18, can undergo contact metathesis as in Figure 19. One needs to check how naturally this phonological process happens with other one-syllable double-contact signs such as DEAF and MATERNAL-AUNT.

Figure 18: MOTHER in citation form (contra-ipsi)

contralateral side ipsilateral side

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

Figure 19: MOTHER under metathesis[8] (ipsi-contra)

ipsilateral side contralateral side

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

[8] A reviewer suggested looking at the preceding and the following sign. Knowing the preceding and the following sign would not change the fact that the initial and final contact places of a contact sign are switched under metathesis.

As the Figures 18-19 show, the definition of metathesis (the process of switching the initial and final contacts of one syllable, two contact signs) needs to refer to the edges of a syllable. This forms the last piece of evidence we present here to the existence of the prosodic constituent syllable in TİD. In the next section, we will strengthen the position that syllable exists as an independent prosodic category by showing that it is a different unit than Sign and Morpheme.

5 Differences between a Syllable, a Sign and a Morpheme

There are differences between a syllable and a sign. (Coulter, 1982; Brentari, 1998). A sign can contain one syllable illustrated by MATERNAL-AUNT in Figure 2 above. A sign can also contain two or more syllables such as BANK below.

Figure 20: The sign BANK which is more than one syllable

Source: http://tidsozluk.net/tr/Banka?d=0875

On the other hand, a sign might have handshape, location and hand orientation specifications while lacking an underlying movement specification in its phonological definition. In other words, a sign can be smaller than a syllable in its phonology (Brentari, 1998). In such signs, a phonetic epenthetic movement is added to the sign for the sign to move to its defining location. An example of such a sign in TİD is KNOW.

Figure 21: Epenthetic movement from BEE to KNOW

BEE KNOW

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

Figure 22: Epenthetic movement from COW to KNOW

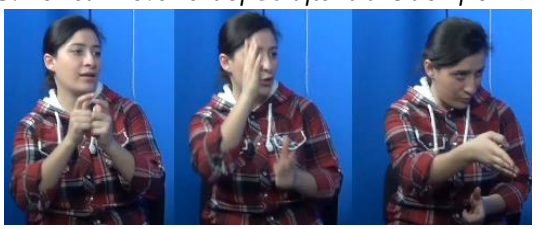
COW KNOW

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

The sign KNOW doesn't have an underlying phonological movement. The only movement that is added to it for phonetic reasons is the epenthetic movement which takes it to its place of articulation, chin, from any other position where the preceding sign ends. The fact that this sign does not have a phonological movement is proved by a comparison of the sequences of signs above. In Figure 21, the hand goes to the place of articulation of KNOW immediately after the end of BEE. Likewise, the hand goes to the place of articulation of KNOW immediately after COW in Figure 22.

Compare this with GO which has an underlying phonological (lexical) movement, not a phonetic epenthetic movement. Therefore, the hand needs to go to the location specified for GO's beginning setting and move from there to its final setting. This movement is clearly different than an epenthetic movement.

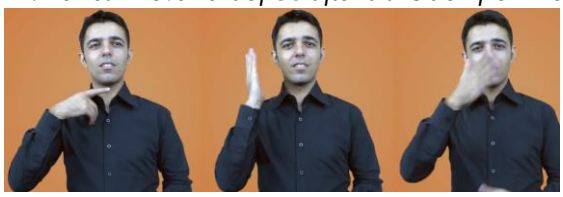
Figure 23: Lexical movement of GO after transition from DEAF-CLUB



DEAF-CLUB GO

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

Figure 24: Lexical movement of GO after transition from Point-self



Point-self GO

Source: http://tidsozluk.net/tr/Gitmek?d=0005

The discussion above shows that some signs have an underlying movement and are thus equal to a syllable size in their phonology while some signs do not have an underlying movement and are thus smaller than a syllable size in their phonology. The latter acquire only a phonetic syllable by way of epenthesis. Therefore, Sign and Syllable are independent units of TİD Grammar.

There are also differences between a Syllable (which is a phonological unit) and a Morpheme (which is the smallest unit of meaning). Previous research exists on this topic (Dikyuva et al., 2017) in TİD but it is relevant to reiterate the points.

Both MATERNAL-AUNT and BANK are single morphemes although the former is a single syllable sign while the latter is more than a syllable. As we noted above, the sign KNOW has no lexical movement specification. Therefore, it is smaller than a syllable, but it still has a single meaning thus it forms a morpheme. This shows that a morpheme can be smaller than a single syllable.

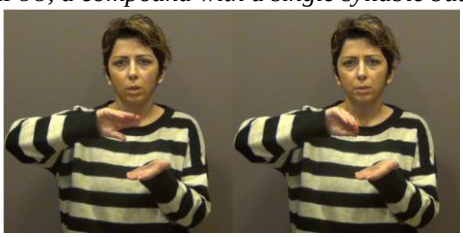
A single syllable sign can have more than one morpheme as well. For instance, the agreement verb, CARE-FOR is composed of two morphemes (verbal root and an object agreement morpheme) although it is monosyllabic.

Figure 25: CARE-FOR includes one syllable but two morphemes

(Boğaziçi University, Sign Language Linguistics Laboratory Database)

Finally, note that some compounds might be reduced to a single movement but there is more than one morpheme in such forms. Below, SHAMPOO has a [squeeze] morpheme and a [hand-for-hand] morpheme although it is a single syllable as articulated by aperture change in the dominant hand.

Figure 26: SHAMPOO, a compound with a single syllable but two morphemes



(Boğaziçi University, Sign Language Linguistics Laboratory Database)

This section showed that Syllable, Sign, and Morpheme are independent units of Grammar supporting our claim in this paper that Syllable is a proper constituent in the prosody of TİD.

6 Conclusion

We had two aims in this paper. Our first aim was to show that syllables exist in TİD prosody (Türk İşaret Dili – Turkish Sign Language). For our first aim, we presented evidence from phonological phenomena which need to refer to the notion syllable in their definition since a specific domain in prosody is substantiated only if there are phonological phenomena that refer to that domain as part of their definition. As for these phenomena, we presented Fingerspelling of one-handed suffixes which are restricted to a single syllable size in their lexicalized form. We also presented some compounds which are reduced to a single syllable size while the lexemes before compounding form separate syllables. Next, as a case of phonological fusion, Coalescence was shown to be limited to a single syllable size. These three phonological phenomena are domain processes which, to be defined, need the entire domain of syllable. We also showed two phonological phenomena that need to refer to the edges of a syllable. These are Metathesis and Backwards Signing in both of which the order of the initial and final edges of the syllable are switched.

To support the existence of a prosodic domain, it is important to show that the specific prosodic domain is independent - it is not isomorphic to a morphological or a syntactic domain (Nespor and Vogel, 2007). Therefore, our second goal was to show that syllables are independent of two other units in grammar - Morpheme and Sign - by illustrating differences between them which we did in Section 5.

There is still much to be investigated about syllables in TİD. A possible study may be conducted about the average duration of syllables in TİD and durations in different structural contexts such as lists, compounds, phrases and different positions in phrases. Two model studies for investigating the length of syllables is Wilbur and Nolen (1986) and Wilbur and Schick (1987) for ASL.

In another study, one can further investigate if there is internal structure in syllables which is a topic that would contribute to both descriptions of a syllable in TİD and to ongoing theoretical discussions in the sign language literature (Liddell and Johnson, 1989; Sandler, 1989; Brentari, 1998, among others). For instance, Wilbur and Allen (1991) found that there is no perceptual evidence for internal structure in an ASL syllable: when asked to tap to the rhythm, their participants' taps were evenly distributed within syllables. They report that this distribution didn't differ from a chance distribution which means that no internal part of the sign is more prominent

than the other parts. One can check if any part of a syllable is more prominent than any other in TİD.

One can also investigate the acquisition of syllables in TİD. For instance, as cited in van der Kooij and Crasborn (2008), Morgan (2005) found that infants break down heavy syllables into two syllables or get rid of one of the movement types in such syllables. One can also check if age of acquisition (native vs. early vs. late signers) influences the production and comprehension of syllables in TİD.

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