A PHONOLOGICAL AND MORPHOLOGICAL ANALYSIS OF INSTRUMENTAL NOUN-VERB PAIRS IN TURKISH SIGN LANGUAGE (TİD)

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Thesis Abstract

Aslı Özkul, “A Phonological and Morphological Analysis of Instrumental Noun-Verb Pairs in Turkish Sign Language (TİD)”

This study investigates the differences between instrumental N/V (insN/V) pairs in TİD through phonological and morphological parameters. Length, repetition and mouthing have been examined as the phonological criteria for insN/V distinction. Additionally, classifier types, iconicity and use of space have been investigated as morphological criteria and their contribution to insN/V distinction has been evaluated.

We used pictures of objects and action videos in experimental settings to collect the data. The final analysis was made on the 120 N/V pairs elicited from four signers. We observed how nouns differ from verbs in terms of six criteria and concluded that mouthing and iconicity are the two prominent criteria to distinguish nouns from verbs in TİD. Then, we compared TİD to other sign languages in the light of the previous studies on the subject.

The discussion focuses on the presence of lexical categories (mainly nouns and verbs) in TİD and universality of these categories with respect to examples from TİD. The elaboration was made on the most suitable approach to lexical categorization for TİD according to its specific characteristics. Lastly, we outlined its contributions to thestudies on sign languages and drew attention to limitations of our study.

Keywords: Turkish Sign Language, Phonology, Morphology, Lexical categorization, Noun-verb distinction

Tez Özeti

Aslı Özkul "Türk İşaret Dili'nde Araçsıl İsim-Fiil Çiftlerinin Birimbilimsel ve Biçimbilimsel Bir Analizi"

Bu çalışma birimbilimsel ve biçimbilimsel araçları kullanarak Türk İşaret Dili'nde araç bildiren isim-fiil (arçİ/F) çiftlerini incelemektedir. Birimbilimsel açıdan, uzunluk, süre ve ağız hareketlerinin İ/F ayrımına katkısı araştırılmıştır. Ayrıca, sınıflandırıcı türü, görüntüsellik ve alan kullanımı da biçimbilimsel araçlar olarak mercek altına alınmış ve bu değişkenlerin İ/F ayrımına katkısı değerlendirilmiştir.

Bu tez için verileri deneysel koşullarda nesnelerin resimlerini ve eylemlerin videolarını kullanarak topladık. Tüm analiz dört katılımcıdan toplanan 120 arçİ/F çifti üzerinden yapıldı. İsimlerin fiillerden nasıl farklılaştıklarını altı değişken açısından inceledik ve sonuçları yüzdelerle ve sayılarla ifade ettik. Bu altı ölçütten, ağız hareketlerinin ve görüntüselliğin TİD'de isimleri fiillerden ayırmaya yarayan iki ana ölçüt olduğu sonucuna vardık. Sonra TİD'i önceki çalışmaların ışığında bu konuda incelenmiş diğer işaret dilleriyle karşılaştırdık.

Tartışma TİD'de temel olarak isimler ve fiiller üzerinden sözcük türlerinin varlığı ve TİD'den örneklerle bu türlerin evrenselliğini üzerinde yoğunlaşmaktadır. TİD'e has nitelikler göz önünde bulundurularak, sözcük türlerini sınıflandırmada en uygun yöntem üzerinde detaylı bir şekilde durulmuştur. Son olarak, çalışmanın alana katkıları kadar çalışmanın kısıtlı kaldığı noktalar da tartışılmaktadır.

*Anahtar Kelimler:*Türk İşaret Dili, Birimbilim, Biçimbilim, Sözcüklerin sınıflandırılması, İsim-fiil ayrımı

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Languages and glossing conventions used

Abbreviations of signed languages

ASL: American Sign Language
ABSL: Al-Sayyid Bedouin Sign Language
Auslan: Australian Sign Language
BSL: British Sign Language
HSJ: Croatian Sign Language
ISL: Israeli Sign Language
LIS: Italian Sign Language
LSQ: Sign Language of Québec (Langue des Signes Québécoise)
NGT: Sign Language of the Netherlands (Nederlandse Gebarentaal)
RSL: Russian Sign Language

Sign language glossing conventions

Small capitals are used to refer to glosses of signs: e.g. SIGN.
When a sign cannot be translated in one English word, hyphens are used: e.g CUT-WITH-SCISSORS.
A classifier morpheme is indicated by CL, followed by a picture of the appropriate handshape, or a letter taken from the manual alphabet from TİD: CL-**T** or CL  .

CHAPTER 1

INTRODUCTION

This research attempts to discover phonological and morphological characteristics of Turkis Sign Language (Türk İşaret Dili, henceforth TİD) regarding its lexical categorization with respect to instrumental verbs and nouns denoting instruments.

The subject of noun-verb distinction has been studied in several sign languages including ASL, Australian Sign Language (Auslan), Russian Sign Language (RSL) and Quebec Sign Language (QSL) among others. These studies have indicated that sign languages distinguish between categories noun and verb. This thesis takes the findings in these works as a starting point to investigate a subgroup of nouns and verbs in TİD and aims to come up with an analysis to understand whether nouns denoting instruments and instrumental verbs differ from each other in TİD and how phonology and morphology play a role in this distinction.

The assumption is that nouns and verbs among all lexical categories are the most prominent ones universally. There is evidence that those categories exist in sign languages as well. Our working hypothesis was that nouns and verbs exist in TİD as separate categories, and so, there should be ways to distinguish them. The fact that we benefited from previous works on sign languages is based on the assumption that there might be common parameters which works in distinguishing different parts of speech. On the other hand, we also assume that sign languages might make use of different means from each other. Therefore, we did not rely only on the previously

suggested parameters but also searched for further clues that might differentiate a noun from a verb.

The highlight of the study is as follows:

(i) whether nouns and verbs are distinct lexical categories in TİD differentiated through instrumental noun-verb pairs (henceforth, insN/V pairs),

if yes,

(ii) whether there are formal differences between insN/V pairs expressed through phonological means such as length, repetition and mouthing,

(iii) whether there is a derivational mechanism between nouns and verbs expressed through classifiers, iconicity, and use of space.

To investigate the questions above, we designed an experiment and elicited 30 insN/V pairs from each of four different informants. We conducted our analysis on the elicited 240 tokens. We focused on the parameters used in previous works and outlined the aspects in which nouns and verbs show different behaviors. Then, we compared our findings to the results of previous works from other sign languages.

Based on the research questions above, we expected TİD to show similar patterns as mostly observed in other nine sign languages in their noun-verb distinction. In those studies, nouns have been found to be shorter in duration, with more repetition than verbs and are accompanied by mouthings more than verbs. Therefore, our working hypothesis was that nouns in TİD would be shorter, with more repetition and accompanied more with mouthings than verbs. Another hypothesis was that the verb, predicate and classifier types would play a role in N/V distinction in TİD as well as iconicity and use of space with regard to sign language morphology, in line with other sign languages that have been studied.

According to the results of our study, TİD shows similar characteristics to other sign languages in some respects, i.e. length, mouthing, iconicity. However, TİD does not make use of repetition, classifier types, and use of space, to distinguish nouns from verbs in the same way as suggested for some sign languages. Additionally, we found that fingerspelling and definiteness might provide clues for the lexical category of an item in TİD.

1.1. Aim and the Scope of the Study

Sign language research is still in its infancy since there are many sign languages that have not been studied and many others that have been under investigation only recently. The oldest studies were conducted on American Sign Language (ASL) in the 1960s whereas studies on TİD date back to only the beginnings of the 2000s. Since the history of the linguistic examination of TİD is quite short, there are many subjects that need to be studied in more detail and many subjects that have not been attempted yet. This thesis aims to fill one of these gaps and contributes to the study of lexical categorization parameters in TİD, with specific reference to instrumental verbs and their noun counterparts.

The N/V distinction in various languages in general has been in the focus of many researchers in modern linguistics since Sapir (1921), though the initial questioning of these categories is known to belong to Aristotle (Robins, 1997). Whether there are universal criteria to define parts of speech adds one more dimension to this subject. Cross linguistically, these categories are mostly defined through their morphosyntactic characteristics and lexical semantics (Haspelmath, 2001). However, the diversity among languages have led researchers to conclude that

semantics is the preliminary basis for uniformity in defining those classes across languages since languages might use different strategies in their phrasal and clausal structures in their morphology and syntax (Croft, 1991, 2000; Wierzbicka, 1998). Therefore, lexical semantics becomes a more applicable criterion cross linguistically according to which nouns denote entities whereas verbs denote actions and states. It also suits the distinction that we are after in this study and the design of our experiment. Instrumental verbs are, by definition, action verbs and our data elicitation technique should capture this directly. We took lexical semantics as the starting point for insN/V distinction in TİD and then designed the stimuli of the study accordingly. In other words, we used object pictures to elicit nouns and action videos to elicit verbs. Then, we built our phonological and morphological analysis based on this premise.

The structure of the study is based on the analysis of phonological and morphological characteristics of insN/V pairs in TİD. The first analysis is built on sign language phonology. Sign language phonology is based on five distinctive parameters: handshape, movement, location, orientation of the palm, and non-manual markers (NMMs) that have phonological functions. However, the investigation of N/V pairs has been made regarding only the movement feature. This is based on the findings of earlier studies. Supalla and Newport (1978) found a systematic distinction in that verbs are generally signed using longer movement and nouns are more repeated than verbs. Later, mouthing which is a nonmanual feature was proposed as another phonological criterion to distinguish nouns from verbs (Johnston, 2001). Therefore, this study will look into movement patterns of nouns and verbs and mouthing in terms of phonological analysis.

The second analysis of insN/V pairs is based on sign language morphology. Definiteness, iconicity, use of space, verb, classifier and predicate types are discussed in detail in relation to insN/V distinction in TİD.

We designed an experiment to test our hypotheses. For the experiment, we collected data from four TİD signers and we used pictures of objects and action videos to elicit insN/V pairs. 80 items, 60 of which were the target items, were presented to each signer and they were asked to sign the objects and the actions as they watched them from a computer screen. There was one control group in the experiment regarding the elicitation of verbs since we aimed to evaluate the effects of aspect on the verb and its contribution to and/or the complications it presents for the study. In the experiment group, the participants were told the action happened in the past and were required to narrate the action accordingly. The control group participants were told nothing as to the happening time of the action. In total, we elicited 120 instrumental verbs and 120 nouns denoting instruments. We developed our analysis based on these elicited materials.

1.2. Terminological Issues

There are several issues to be clarified about the terminology used in this thesis. The first issue is related to the name of categorization. ‘Lexical categories’, ‘parts of speech’, ‘word classes’ are widely used terms to refer to the subject that we study in this thesis. We will use ‘lexical category’ and ‘parts of speech’ interchangeably throughout this work. However, there is another alternative called ‘sign class’ which is utilized by some scholars to classify words in sign languages (Johnston, 2001; Meir, 2012; among others). We will not address the problem as a modality specific issue; therefore, we will not employ the term ‘sign class’ in the thesis.

The second issue is the origin of the name of N/V pairs that are under investigation in this study. Although the terms “instrumental noun” or “instrumental verb” have not been used before for such pairs, we chose these terms because they both denote an instrument either as an object or an action employing that instrument.

1.3. Background on TİD

TİD is the language of the Deaf in Turkey. It is used by around 84.000 deaf people residing in the country[1] and by their families (Kemaloğlu & Kemaloğlu, 2012). TİD is said to be one of the oldest sign languages documented with the argument that it was used in the Ottoman palace during the years 1500-1700 (Miles, 2000). However, it is not certain that the language used in the palace was the origin of TİD, or whether it was a different language. Regarding the schooling of the deaf people in Turkey, this dates back to the Ottoman Empire in the beginning of the twentieth century. The first school for the deaf was founded in 1902 (Deringil, 2002). There are public deaf schools since the 1950s where the education is based on an oralist approach, which means the sign language has never been a medium of instruction and communication in those schools (Kemaloğlu & Kemaloğlu, 2012). As a final remark on TİD, it was officially recognized by the Turkish government only recently and a new law was passed for TİD to be used in the education of the deaf in 2007 (Özyürek & Perniss, 2011). However, sign language is still not the medium of instruction at today’s schools although this matter was highlighted in the legal regulations of 2005 (Kemaloğlu & Kemaloğlu, 2012). A special education program has not been

[1] There is another sign language named Mardin Sign Language (Mardin İşaret Dili) which is spoken in a city in the southeast of Turkey. But, the number of the users of this language is quite small (Dilsiz & Kihtir, 2011).

implemented yet, either. As Kemaloğlu & Kemaloğlu claimed, teachers learn TİD by themselves but the tendency is towards mostly signed Turkish.

The first linguistic documentation of TİD was made by Zeshan (2002). To date, typological issues (Zeshan, 2002, 2003), grammatical relations and word order (Sevinç, 2006), sentence types (Açan, 2007), phonological and morphological characteristics (Kubuş, 2008), syntactic aspects (Gökgöz, 2009), spatial relations and classifier constructions (Arık, 2010; Özyürek, Zwitserlood & Perniss, 2010; Arık 2013) lexicalized fingerspellings (Taşçı, 2012), nonmanual activities that occur with interrogatives (Göksel & Kelepir, 2013; Makaroğlu, 2012, 2013), a brief history (Kemaloğlu & Kemaloğlu, 2012), reported speech (Kelepir & Göksel, 2013), and acquisition of locative expressions (Sümer, Zwitserlood, Perniss & Özyürek, 2013) have been investigated in TİD.

1.4. The Organization of the Thesis

We structured the thesis as follows:

In Chapter 1, we provide some background information on TİD and the topics that have been studied in TİD. Additionally, we present the aim and the scope of the study in more detail.

Chapter 2 covers theoretical issues that are relevant to sign language phonology and morphology and emphasizes the phonological and morphological criteria that are used for the purpose of N/V distinction throughout the thesis.

The aim of Chapter 3 is to outline the previous studies on lexical categorization first in general, then, in sign languages in particular. It summarizes the findings of those studies in relation to the present study as well.

Chapter 4 sketches out the organization and compilation of the data and the methodology that we followed. It informs the reader about the participants, stimulus, procedure, both in the pilot and the main study, and lastly, the parameters to evaluate the data.

In Chapter 5, we present the results with regard to the phonological and morphological criteria that we are investigating in numbers and/or in percentages.

In Chapter 6, we discuss the results that we obtained from our analysis of insN/V distinction. This is the section where we seek the answers to our research questions. We also compare TİD to other languages in terms of their lexical categorizations. Furthermore, we look at the contribution of the present study to linguistic research.

Chapter 7 is the section where we present the concluding remarks with reference to future work.

CHAPTER 2

SIGN LANGUAGE PHONOLOGY AND MORPHOLOGY

Sign languages are natural languages that are different from spoken languages in terms of their modality. Sign languages use the visual-spatial modality whereas spoken languages make use of the oral-audial modality. This selection of mode affects how these two different modalities are analyzed into their phonological, morphological and syntactic components. While sign languages allow simultaneous linguistic structures more, spoken languages are observed to rely more on sequentiality (Sandler & Lillo-Martin, 2006). Thus, the investigation of linguistic components of sign languages yields results that are both similar to and different from spoken languages. One of these study areas is the lexical categorization in sign languages, which is also the subject of this thesis. We organize this chapter in such a way that it addresses the simultaneity and sequentiality of sign languages at the same time while discussing the phonology and morphology of sign languages.

We start with presenting phonological components of signs in the following section (2.1) in order to explain potential phonological differences between nouns and verbs in sign languages including TİD. Then, we outline the morphology of sign languages in relation to lexical categorization in Section 2.2.

2.1. Phonology of Sign Languages

2.1.1. Building Blocks of Signs

A sign is the minimal expression with a meaning. These expressions are conveyed through certain handshapes that are available in the inventory of a specific sign

language. They might be composed of a letter as in V letter for VIRUS in TİD (Taşçı, 2012), or a classifier handshape as in the Flat-Hand for wide and flat objects in TİD (Kubuş, 2008). On the other hand, signs might represent a single word (PHONE), a phrase (PHONE-HIM) or a clause (I-PHONE-HIM). Whatever the shape and the representations are, signs can be described both phonologically and morphosyntactically.

Stokoe (1960) was the first researcher who claimed words in sign languages consist of independent building blocks like words in spoken languages. He put forward the idea that words are made up of three components: handshape, movement and location. The fourth parameter, orientation of the palm, was proposed later by Battison (1978).

To obtain handshape, location, movement and orientation inventories in a sign language, researchers mainly refer to minimal pairs. Minimal pairs in sign language differ from each other in only one of the parameters stated above. Kubuş (2008) presents four different types of minimal pair to investigate the parameters in TİD: For instance, PUNISHMENT and CHICKEN are minimal pairs in TİD regarding their handshape. Their locations and movements are the same whereas they differ only in terms of their handshapes (Figure 1). (Kubuş, 2008:19):

Figure 1. A sample minimal pair in terms of handshape in TİD: PUNISHMENT vs. CHICKEN

A second minimal pair that Kubuş suggests for TİD is EARTHQUAKE vs. SIEVE. The handshape, location and movement of these words are the same whereas the orientations are different (Kubuş, 2008:20):

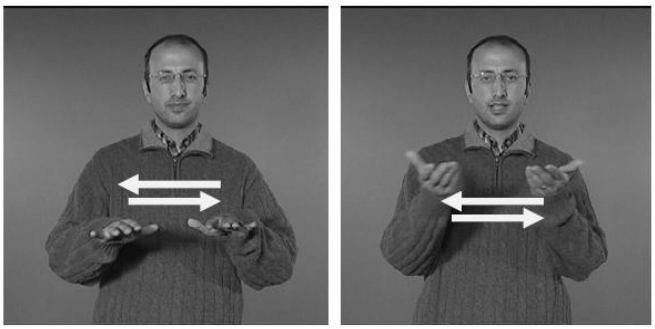


Figure 2. A sample minimal pair in terms of orientation in TİD: EARTHQUAKE vs. SIEVE

The signs in the third minimal pair differ only in terms of location. The examples are YEAR vs. RUDE (Kubuş, 2008:20):

Figure 3. A sample minimal pair in terms of location in TİD: YEAR vs. RUDE

The last minimal pair to be presented has the distinction in terms of movement. Even though the handshape, location and orientations are the same, the movements of these signs in space are different, as in FREE vs. SOMETIMES (Kubuş, 2008:21):

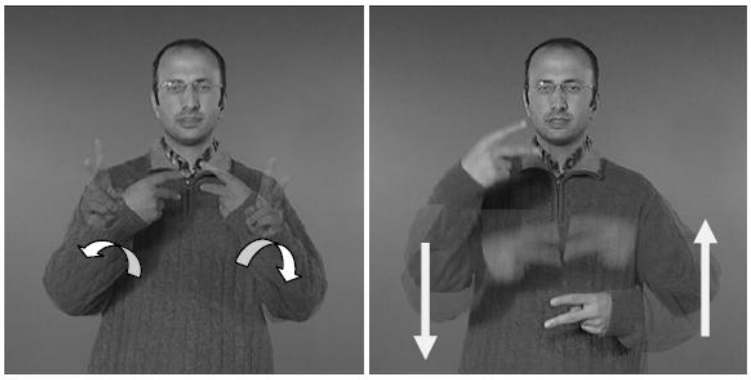


Figure 4. A sample minimal pair in terms of movement in TİD: FREE vs. SOMETIMES

These four phonological parameters that we mentioned so far are based on hands and manual activities. Non-manual markers (NMMs) might also be phonological components of words in sign languages. Head shake, eyebrow raise, mouthing are among several other NMMs. These NMMs might have grammatical functions in an utterance. They can occur at different levels such as phonology, morphology and syntax. For instance, they might function as edge markers or domain markers in

syntax (Pfau & Quer, 2010). For the purposes of the present study, we elaborate on phonological functions of NMMs at the lexical level, specifically on mouthing since the previous studies on N/V distinction in other sign languages have revealed that mouthing is a distinctive feature between these two lexical categories (see Section 3.2.2).

Phonological NMMs are the compulsory components of a word. They behave like any one of the four phonological parameters described above. They need to be included in the description of the word in a sign language (Pfau & Quer, 2010). Those NMMs are conveyed through head, torso, eyes, face and mouth. Having been argued as a phonological criterion in N/V distinction in sign languages, mouth patterns are of two types. Pfau and Quer distinguish between mouth gestures as a phonological component of a sign and mouthing as an exterior element. Mouth gestures are not under the scope of this study. Rather, we focus on mouthings which might affect the N/V distinction in TİD as claimed for several sign languages (see Chapter 3).

Mouthing, as a phonological NMM, is usually affected by the surrounding spoken languages (Engberg-Pedersen, 1993; Sandler & Lillo-Martin, 2006, Pfau & Quer, 2010). Signers might do the mouthing of the whole spoken counterpart or the initial syllables or the reduplication of first syllable of it along with the sign (Pfau & Quer, 2010). The main purpose of using mouthings is to ease the perception of the sign by the receiver (Engberg-Pedersen, 1993). Following that function of mouthings, some researchers argue that mouthing is only the result of language contact, therefore, not significant in the phonological description of a word (Hohenberger & Happ, 2001). However, it is also proposed that mouthings have a

systematic role in the N/V distinctions in several sign languages (Johnston, 2001; Voghel, 2005; Kimmelman, 2009; among others). Therefore, we take mouthing into consideration as a potential distinctive phonological feature and analyze and discuss it in the following sections of this thesis as well.

2.1.2. Phonological Analysis of Signs

Having looked through the phonological elements in sign languages in the previous section, we give a brief background information on models of sign language phonology in this section. We also demonstrate how we decided on the boundaries of a lexical item, a point which is important for the analysis of insN/V pairs.

2.1.2.1. Move-Hold Model

Linguistic complexity of sign languages relies mostly on simultaneity since their modality allows simultaneous structures. Still, there is a sequential structure so that signs can be analyzed into their components. Liddell and Johnson (1984, 1989) developed a phonological framework which is called the Move-Hold Model that enables us to examine signs sequentially. According to them, signs consist of movements and holds. Movement (M) refers to the interval when the hand is moving in space from one location to another whereas hold (H) indicates the interval when the hand is still. Therefore, H is where all the phonological parameters are defined while M is shown as a transition (see Figure 5).

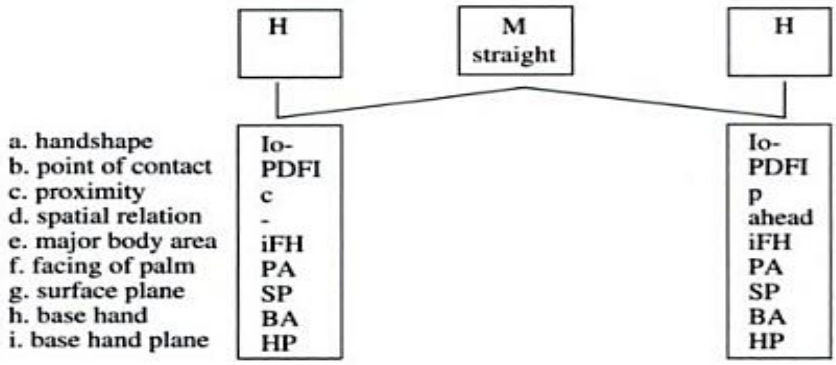


Figure 5. Representation of IDEA in Move-Hold Model (Sandler & Lillo-Martin, 2006:129)

2.1.2.2. Hand-Tier Model

A second model, called the Hand-Tier Model, was proposed by Sandler (1986, as cited in Sandler & Lillo-Martin, 2006). Her model aims to address both the sequential and the simultaneous nature of sign language phonology. It allows a sequential analysis through location (L) and movement (M) and a simultaneous analysis through hand configuration (HC).

Location and movement in this model correspond to hold and movement in the previous model. As the most basic difference between these two models, HC functions as an autosegment in the latter model. In other words, Sandler sets the sequential segments as location-movement-location (see Figure 6). She puts hand configuration on the top of the schema representing that the hand is independent from location and movement.

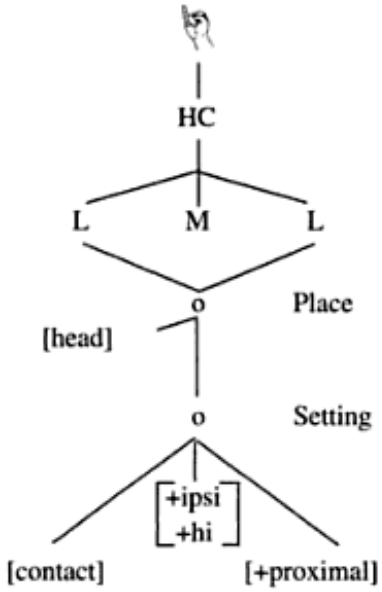


Figure 6. Hand Tier Representation of IDEA (Sandler & Lillo-Martin, 2006:132)

2.1.2.3. Comparison of the Two Models

The Move-Hold Model in comparison to the Hand-Tier Model requires a more detailed phonetic description at every hold whereas one hand configuration defines the handshape for a sign in the second model. This is what makes the latter model superior to the first model. Hand-Tier Model represents a better picture of sign language phonology by taking the simultaneous characteristics into account as well. We will make use of the first model since our phonological analysis is based mainly on sequentiality, repetition and duration in describing the word boundaries in our study. The second model has its benefits for the present study because we do not need a detailed description of every hold and it allows reflecting simultaneity, which means we will refer to the both models while analyzing our data.

2.2. Morphology of Sign Languages

Use of classifiers, verbal agreement, noun incorporation, pluralization, verbal aspect are among the morphological processes that are commonly investigated in sign languages (Sandler & Lillo-Martin, 2006). Use of space and iconicity are extensive issues in sign languages that have also implications for sign language morphology. Some of these processes are closely related to the subject of this thesis, and they will be introduced in this section and discussed with respect to our data from TİD in the following sections. This section starts out with the discussion of the terms 'sign', 'word', and 'lexeme' regarding the basis of N/V distinction in TİD. What do we investigate: signs, words or lexemes? Then, we mention derivational and inflectional processes in sign languages in general. Finally, we present the morphological criteria that are candidate for distinguishing nouns denoting instruments from instrumental verbs.

2.2.1. Lexeme, Word, and Sign

Our primary aim is to look into insN/V pairs and report the differences if they display any regarding their phonology and morphology. Hence, it is of great significance to look at the right form to be able to discuss these differences.

To begin with the lexeme, this is defined for sign languages as:

> ...a sign that has a clearly identifiable and replicable citation form which is regularly and strongly associated with a meaning which is (a) unpredictable and/or somewhat more specific than the sign's componential meaning potential, even when cited out of context, and/or (b) quite unrelated to its componential meaning potential (i.e., lexemes may have arbitrary links between form and meaning). (Johnston & Schembri, 1999:126)

Secondly, a ‘word form’ is “the phonological and orthographic sound or appearance of a word that can be used to describe or identify something.” (The Free Dictionary, 2013) Words in sign languages are stated as ‘signs’ as well (Meir, 2012). We adopt here the definition of sign by Johnston and Schembri (1999:117):

> A sign is defined as a relatively stable, identifiable visual-gestural act with an associated meaning which is reproduced with consistency by native signers and for which, consequently, particular agreed values can be given for handshape, orientation, location and movement (including lack of movement). Signs may also include nonmanual features (such as a particular facial expression, mouth pattern, or movement of the head and/or trunk).

The forms that we tried to elicit in our study are citation forms of lexemes. Therefore, we mean the dictionary form of a noun or a verb when we mention, for example, MIXER as a noun vs. STIR-WITH-A-MIXER as a verb form. By asking either directly the citation form of an entity or by eliciting two different word forms of an action, we aimed to reach the lexemes of insN/V pairs.

2.2.2. Derivation and Inflection

Sign languages show derivational and inflectional processes that are observed in spoken languages. A process that ends in a change of the lexical class is a derivational one. However, aspect on the verbs, for example, is an inflectional one. The realization of these processes might be different in sign languages due to their modality specific features. As we mentioned at the beginning of this chapter, sign languages are likely to use simultaneous means more than most spoken languages. Therefore, we look into the lexical class-changing processes both in sequential and simultaneous levels and also make use of inflectional processes to distinguish nouns from verbs in TİD. In the following subsections, we will scrutinize verb classes which will contribute to the analysis of N/V distinction in the subsequent chapters. Then, we describe classifier types, introduce use of space and iconicity as

morphological criteria to be used as distinctive features in instrumental N/V pairs in TİD.

2.2.3. Verbs and Verb Classes

This section looks into verb classifications in the literature of sign languages and why and how they are important for the present study. Verbs of a sign language were first classified by Padden (1988) for ASL. She classified verbs into three groups, namely plain, spatial and agreeing verbs according to how verbs encode their arguments. To start with plain verbs, these do not encode any property of their arguments. For example, KNOW in TİD is a plain verb.

Figure 7. KNOW as a plain verb in TİD (Dikyuva & Zeshan, 2008:36)

Spatial verbs convey information about the referent locus/loci. GO is an example verb from TİD that employs spatial agreement.

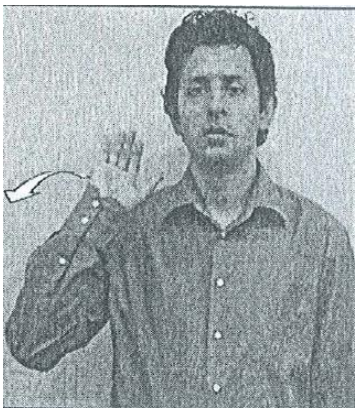


Figure 8. GO as a spatial verb in TİD (Dikyuva & Zeshan, 2008:67)

Lastly, agreeing verbs encode person and number in their structure. GIVE is a canonical example for this category crosslinguistically. It is also the case for TİD.

Figure 9. GIVE (TO ME) as an agreement verb in TİD (Dikyuva & Zeshan, 2008:101)

This classification has been applied to many sign languages including TİD. Sevinç (2006) draws a sketch of verbs in TİD within the framework by Padden (1988). She concludes that TİD fits in this classification as well as other sign languages in the study where she studies grammatical relations and word order in TİD.

Padden's (1988) classification of verbs introduced above has a semantic basis rather than a morphological one (Engberg-Pedersen, 1993). In other words, spatial

verbs are different from agreeing verbs not in shape but in meaning. In terms of morphology, plain verbs are simple in the sense that they do not mark any of their arguments on the verb forms. However, both spatial and agreeing verbs are complex forms since they have either person or location encoded on the verb. Though the arguments of two different types of verbs refer to different semantic roles, their morphological realizations are the same. This causes some complications in drawing clear-cut morphological distinctions between these two classes. On the other hand, there is another classification developed by Engberg-Pedersen using morphological criteria. She proposes an alternative verb classification of signs according to morpho-syntactic criteria. She puts verbs on a continuum from simple verbs to complex verbs. Predicate adjectives (RED), and plain verbs (KNOW) are in the simple verbs group. There is another group in the middle of the continuum which includes indicating verbs. She divides this group further into three agreement groups (i) double agreement (PAY), (ii) single agreement (THANK) and (iii) pragmatic agreement verbs (TALK). Lastly, complex verbs are the ones which contain classifier constructions in their morphological structure. The third group of verbs is also divided into three further groups: (i) verbs of motion and location, (ii) verbs of handling and (iii) predicates of visual-geometric description (see Table 1).

Table 1. Types of Verbs in Signed Languages (with examples from Australian Sign Language (Auslan)) Based on Engberg-Pedersen's (1993) Classification of Verbs (Schembri, 2003:5)

Simple Verbs <.....> Complex Verbs		
Predicate Adjectives RED, BOOK, BIG	Double agreement/indicating verbs TEASE, BLAME, PAY	Verbs of motion & location CP-: Animate-entity+(r+move-line+1) "A person passes by."
Plain Verbs KNOW,LIKE, UNDERSTAND	Single agreement/indicating verbs THINK, TELL, ORDER	Verbs of handling CP-: Handle-lumplike-entity+(c+move+are+f) "(Someone) give(s) someone a lumplike object."
	Pragmatic agreement/indicating verbs BUY, TALK, MAKE	Predicate of visual-geometric description CP-: Two-dimensional outline+(trace:circle) "A circular shaped object exists."

Complex predicates, classifier predicates, polymorphemic predicates, polycomponential verbs refer to the same phenomenon, which is 'morphologically complex verb' (Schembri, 2003). Schembri prefers to call these not classifier predicates but polycomponential verbs because (i) predicate is a sentential constituent, not a word class, (ii) adjectival predicates can be considered as stative verbs (p.4). Keeping this argumentation in mind, we use "classifier predicates" to refer to both nouns and verbs that employ classifiers throughout our study since our aim is to distinguish between nouns denoting instruments and instrumental verbs that have classifiers in their structures (to be discussed in 2.2.3.1). Lastly, to compare the

two verbal categorizations, the second verb classification provides a better point of view to examine N/V pairs in our study since it does not only compare simple predicates with complex predicates (classifier predicates) but it might also facilitate distinction of nominal predicates from verbal predicates. To build further on the argument of a need for verbal classification, we present the classifier types in the next section.

2.2.4. Classifiers

2.2.4.1. What Is a Classifier?

Classifiers (henceforth, CLs) are morphemes that convey information about the shape, size, handling of an entity that is involved in an action and/or present in a location (Zwitserlood, 2003; Sandler & Lillo-Martin, 2006). CLs were originally named after the CLs in spoken languages which classify lexical categories on the basis of their salient features such as shape, number, and possession and so on. Frishberg (1975) was the first research that introduced the term ‘classifier’ to the sign language literature referring to similarity in the shape and functions of CLs in spoken languages. Later, it was argued that these are not compatible with the CLs in sign languages (Schembri 2003; Sandler-Lillo-Martin, 2006, among others). Although there are common points for CLs in languages of both modalities, there are some features unique to CLs in sign languages (Schembri, 2003).

CLs have various functions across languages. For example, Aikhenvald (2003) defines CLs as morphemes that classify nouns according to semantic criteria. There are several other functions, though. Aikhenvald (2000) listed them as in Table 2. We will not refer to all of these roles in our study. Instead, we will investigate

whether CLs have another function, which is distinguishing nouns from verbs in TİD.

Table 2. Functions of Classifiers (Aikhenvald, 2000:306)

Classifier Type	Semantic/Pragmatic Function
Numeral Classifier	Quantification, enumeration
Noun Classifier	Determination
Verbal Classifier	Object/subject agreement
Relational Classifier	Possession
Possessed Classifier	Possession
Locative Classifier	Spatial location
Deictic Classifier	Spatial location, determination

The presence of CLs in nouns denoting instruments and/or instrumental verbs is important for our study of the N/V distinction as previously stated. The first question regarding CLs is whether nouns are different from verbs in employing CLs. Following that, the second question is whether these nouns and verbs select any of the CLs types. In the next section, we will present classifier types, predicate types, and noun incorporation in relation to CLs.

2.2.4.2. Classifier Types

The first methodological analysis of CLs was conducted by Supalla (1982) for ASL. He classified them into two main groups as (i) Size and Shape Specifiers (SASSes); (ii) semantic CLs. Zwitserlood (1996, 2003) later proposed a classifier categorization that is applicable to other sign languages by reflecting on the previous classifications by Supalla (1982), and Benedicto & Brentari (2004) which listed the "most extended set of CLs". This categorization by Zwitserlood (2003) includes three main groups:

SASSes, handle (instrumental) CLs and entity CLs. We will refer to these three groups whenever we mention classifier types in the following paragraphs and in the rest of the thesis.

To start with SASSes CLs, these convey information about the size and shape of the referent whether it is big or small, and whether it has a rectangular or round shape, or so on.

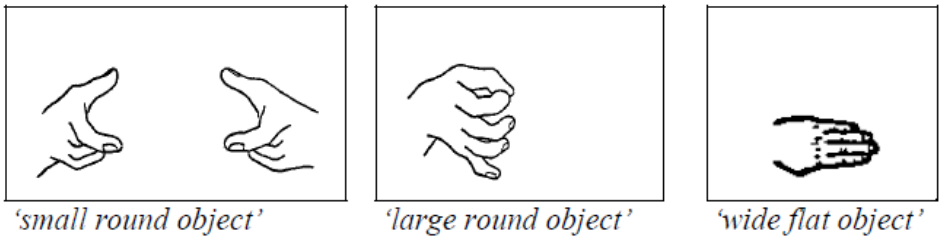


Figure 10. SASSes Classifiers (Supalla, 1982:27,7)

Semantic CLs, which were analyzed later as entity CLs (Engberg-Pederson, 1993; Schembri, 2003; Zwitserlood, 2003; Sandler & Lillo-Martin, 2006; among others) encode the semantic features of the referent. In other words, they convey information about a semantic feature of a referent rather than its physical features, for instance "the class of small animals".

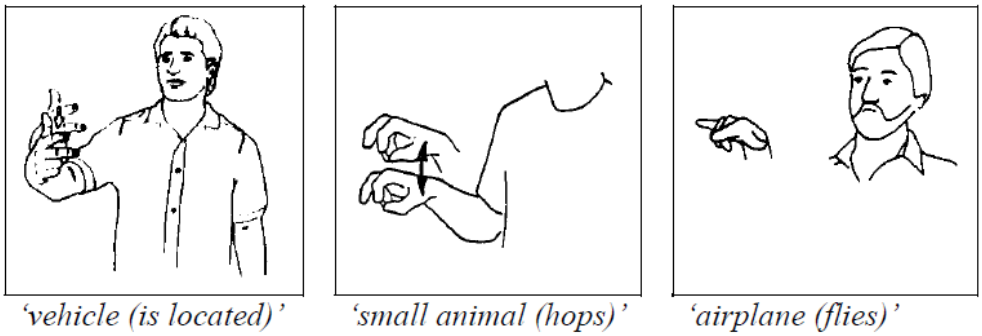


Figure 11. Entity Classifiers (taken from Valli & Lucas 1995; Supalla 1986 as cited in Zwitserlood, 2003:18)

It is asserted in the literature that entity CLs function as the subject in intransitive clauses, handshape being the referent (Zwitserlood, 2003; Pfau, 2010). In the

following examples from NGT, there is a car (1a) and a person (1b) classifier within the root MOVE-ALONG as the subject of the intransitive clause (Pfau, 2010, p. 72):

(1) a. STREET CAR MOVE-ALONG

'A car drives along a street.'

b. STREET PERSON MOVE-ALONG

'A person moves along a street.'

The third classifier type named handle or instrumental classifier was introduced later into the literature (McDonald 1982, Schick 1987, Schick 1990, as cited in Sandler & Lillo-Martin 2006). This type of CLs shows how the referent is handled or manipulated by an animate entity or the instrument itself (Engberg-Pedersen, 1993; Zwitserlood, 2003).

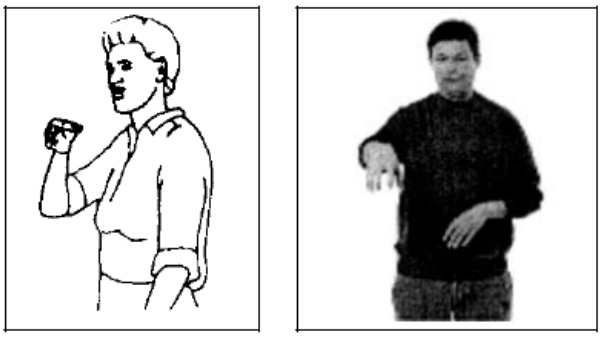


Figure 12. Instrumental classifiers (taken from Valli & Lucas 1995; Wallin 1996 as cited in Zwitserlood, 2003:19)

These mainly function as the direct object of transitive clauses as shown in the following examples from NGT (Pfau, 2010, p72):

(2) a. WOMAN FLOWER $_3$GIVE$_1$

'A woman gives me flower.'

b. WOMAN CUP $_3$GIVE$_1$

'A woman gives me a cup.'

2.2.4.3. Classifiers in Turkish Sign Language

CLs are suggested to be universal in sign languages. But, their use varies from one sign language to another. As opposed to many sign languages which show characteristics of all three types of CLs, for example, Adamorobe SL was argued to have no entity CLs despite having a few instrumental CLs (Nyst, 2007).

TİD is a language that makes use of CL constructions. Zeshan (2002) was the first research to mention CLs in TİD. Apart from stating that TİD is a sign language that makes use of CLs like many others, she introduced a new classifier, namely, honorific person classifier.

Figure 13. Non-honorific and honorific person classifier (Zeshan 2003:65)

A later work by Kubuş (2008) lists the CLs in TİD in terms of these three types (for a detailed list, see Kubuş, 2008). There are some other researches that investigate the status of CLs in TİD. Arık (2008) and Perniss and Özyürek (2008) analyzes CLs in terms of locative constructions and use of space. Additionally, Arık (2010) elaborates on CLs in TİD in comparison with Croatian Sign Language (HSJ) and ASL. From those studies, we know that TİD shows examples of the three classifier types and utilizes them for different functions.

2.2.4.4. Predicate Types

Özyürek and Perniss (2011) categorize predicates into two groups in their study where they discussed the event representations in sign languages. They argue that a lexical predicate is the citation form of the sign whereas a classifier predicate denotes size and shape or handling of the referent in addition to the sign. In other words, classifier predicates have a more specific meaning than lexical predicates. What kind of predicate types are found in our data according to Özyürek and Perniss' classification will be provided in Section 5. We considered predicate types might play a role through embedding of CLs in nouns and verbs. To measure this, we will compare the number of employed CLs by nouns and verbs and see whether there is a significant difference that might help insN/V distinction in TİD.

2.2.4.5. Noun Incorporation

Noun incorporation can be described basically as 'a morphological construction where one lexical element is added to another; the resulting construction being a single word' and it is a common structure across various sign languages as well as spoken languages (Schuit, 2003:36). How instruments are incorporated in verbs is a fundamental question to ask to determine the role of CLs considering our study.

Meir (1999) categorizes CLs into two groups as to how they are incorporated in verbs. These groups are theme CLs and instrumental CLs. Among her canonical examples, there is SPOON-FEED, which corresponds to 'feed with spoon' in Israeli Sign Language (ISL). This distinction is quite important for this study since we also differentiate between different incorporated CLs in section 5, and analyze how they contribute to the insN/V distinction.

2.2.5. Use of Space

Use of space in sign languages has a multifunctional characteristic that is specific to visual-spatial modality. To some, it represents location through iconicity as well as fulfilling syntactic purposes (Engberg-Pedersen, 1993). Another function has been proposed by Zeshan (2003) and Schwager and Zeshan (2008) which is the classification of signs. According to these two works, directionality is a means to classify sign language word classes. Therefore, the analysis of use of space can be made on the phonological, syntactic, pragmatic and morphological grounds. Furthermore, Voghel (2005) notes a distinction between nouns and verbs expressed through use of space. According to her, verbs reuse previous locations whereas nouns might be assigned to a/any location in the signing space. Moreover, Kimmelman (2009) argues in his article that verbs have wider movements than nouns do. Since this function of use of space is more morphologically related to lexical categorization than other linguistic areas, we take it as a morphological criterion for identifying parts of speech.

2.2.6. Iconicity

Iconicity is a feature that is mostly attributed to sign language modality. It "refers to a direct or transparent relationship between form and meaning" (Sandler & Lillo-Martin, 2006, p.493). Iconicity manifests itself in the "shape, movement, outline or any other typical visual characteristics" (Teervort, 1973).

Signs consist of iconic forms as well as arbitrary ones. Iconicity reflects the salient features of the referent, such as movement, size and shape and it is closely related to the age of the sign language (Sandler & Lillo-Martin, 2006). When the

language gets older, iconic forms might turn into more arbitrary forms by losing their salient characteristics. Iconicity is a criterion offered to distinguish nouns from verbs (Johnston, 2001; Schuit, 2007; Kimmelman, 2009; Meir, 2012), therefore, it is among the morphological criteria in our thesis despite its many uses.

Kimmelman (2009) says for RSL: "verbs make iconic use of contact, palm orientation, and location, while nouns do not. Nouns tend to involve neutral and hence more economic orientations and locations."(p.180). Following his argument and other studies that made use of iconicity as a distinctive parameter, we compared verbs to their corresponding nouns in terms of these three aspects.

To sum up, this chapter has given an overview of the phonological and morphological components of signs. Furthermore, it has elaborated on the features that have been observed in other sign languages and might be distinctive also for TİD. The next chapter will give a detailed account of how these features have yielded positive results in distinguishing nouns from verbs in different sign languages.

CHAPTER 3

LITERATURE REVIEW

3.1. Classification of Lexical Categories in Spoken Languages

Parts of speech are the categories of lexical items in a language. Those categories have been defined for the purpose of grammatical description of words through morphology, syntax and lexical semantics (Haspelmath, 2001). There are ten parts of speech namely noun, noun, verb, adjective, adverb, pronoun, preposition, conjunction, numeral, article, interjection (Haspelmath, 2001, p.16538). Not all languages have these ten distinct categories, but the most commonly observed categories across languages are nouns, verbs, and adjectives.

Though noun and verb were first mentioned as two different classes by Aristotle (Robbins, 1997), the universality of lexical categories was first proposed by Sapir (1921). However, classification of parts of speech across languages is often quite problematic. There are no clear boundaries between word classes in some languages, and some languages lack some of these word classes (Evans, 2000). For example, nouns and verbs display very similar characteristics in Samoan, and Korean is a language which lacks adjectives and it makes use of predicates to modify nouns (Haspelmath, 2001, p.16543).

Still, there are some researches such as Wierzbicka (1998) and Croft (2000) who strongly argue that lexical classes do not belong to specific languages, rather, they are universals across languages. Croft considers both semantic criteria and pragmatic functions while making a crosslinguistic analysis of these categories. His prototype model (1991, 2000) emphasizes the clear distinction between language

universal and language particular aspects. Chung (2012) is another work which claims the universality of lexical categories. This work displays the ways of distinguishing noun, verb, and adjective categories in Chamorro which is a language that has been said to make no distinction among its parts of speech.

Some researchers believe that semantic criteria do not work in distinguishing among lexical categories (Schachter, 1985). According to his view, these categories are the results of morphological and syntactic processes.

In our study, we started with the assumption that lexical categories are universal; therefore, there are such categories as nouns and verbs among others in TİD. Additionally, we took semantic criteria as the basis for the elicitation of our data and define the distinction between insN/V pairs accordingly. Phonological and morphological criteria will be analyzed in the later chapters based on this premise. Syntactic criteria to determine lexical categories are not under the scope of this study.

The discussion has been on the universality of lexical categories so far. To classify these categories according to which criteria has been a quite controversial issue among researchers, as well. There have been several approaches to lexical categorization in the linguistics literature. Investigation of these approaches is important in that they show how and when phonology, morphology, syntax and lexicon could play a role in N/V distinction in languages. It might provide a better understanding of lexical categorization in TİD in the light of data we obtained.

To begin with the lexicalist view, this is an approach that claims lexical items are categorized in our lexicon as ‘noun’, ‘verb’, ‘adjective’, so on (Di Sciullo & Williams, 1987; Levin & Rappaport Hovav, 2005). When they are retrieved from the lexicon to the syntax, they are already derived and/or inflected.

Another view argues that there are primitives in the lexicon and verbs are derived from them (Hale & Keyser, 1993, 2002). According to this computational view, lexical items are defined just before they are inserted in the syntactic tree. In other words, there are base forms in the lexicon and the derivatives of them gain lexical categorization and have their place in syntax accordingly.

On the other hand, another approach called Distributional Morphology does not categorize lexical items in the lexicon at all (Morris & Marantz, 1993; Marantz, 1997; Embick & Marantz, 2008). Followers of this framework argue that it is the syntax that determines the category, roots lack grammatical information at the beginning. There is no specification in the lexicon as to the category of items. Syntax does the computation and decides on the category. We also investigate if there is any clue for the basis of lexical categorization regarding these approaches mentioned above based on the data we elicited.

So far, the discussion has been centered on spoken languages. At least, the evidence for the framework at quest is chosen from spoken languages. The frameworks used in understanding lexical categories are also applicable to sign languages since sign languages are natural languages and they have their own lexicon morphology, phonology, and syntax. It means lexical categories are likely to be present in sign languages.

Haspelmath (2001) says "…it is not possible to define crosslinguistically applicable notions of noun, adjective, and verb on the basis of semantic and/or formal criteria alone" (p.16544). It is probable that the problem gets more complicated if there are the languages of a different modality, sign languages. Additionally, Haspelmath (2012) criticizes the question "Does language X have noun verb distinction?" as a wrong question to start with since lexical categories cannot be

defined cross-linguistically and they can be defined only for a particular language. According to him, the characteristics of a certain class in a particular language cannot be transferred to other languages. It means, for example, nouns do not display the same characteristics crosslinguistically. Our prediction is that this might be also the case for sign languages as well as spoken languages.

3.2. Classification of Lexical Categories in Sign Languages

Lexical categories have been listed for many spoken languages. Each word class has been defined according to a set of phonological, morphological, syntactic criteria. However, a few studies have been conducted on lexical category distinction in sign languages (Supalla & Newport, 1978; Pizzuto and Corazza, 1996; Johnston, 2001; Voghel, 2005; Kimmelman, 2009; among others). Phonological, morphological, syntactic features are analyzed in some of the sign languages listed in 3.2.1. To begin with, phonological characteristics are examined in the frequency of movements in a sign, duration and mouthing patterns. Secondly, morphosyntactic criteria are analyzed through negation, possession and spatial relations of the lexical item. Among those, the analysis of spatial characteristics was proposed by Zeshan (2000) with the argument that a sign classification is possible in Indo-Pakistani Sign Language (IPSL) through its spatial characteristics.

Zeshan (2000) classifies words in sign languages into three categories regarding their spatial characteristics. According to her analysis, one class of signs is still and they do not move in space. In the second category, signs are articulated in a neutral location in space. The third class of lexical items has directional movements in themselves, and they move between two locations. However, this classification is

based on the form of the signs and they do not give any clue as to the effect of space to the lexical categorization. Therefore, the motivation that triggers this kind of classification should be clarified.

As to the basic form discussion, there is a common view suggested for some sign languages. Supalla and Newport (1978) first argued that there is a common underlying form for identical N/V pairs. According to them, these forms go through certain operations to obtain necessary features regarding movement, location and orientation to realize as nouns or verbs. Likewise, Johnston and Schembri (1999) took the lexeme as the generic form instead of choosing one category over another as the basic form. When they compared SIT and CHAIR, they took the lexeme as the base form and defined the lexeme as "the action of placing a hand or flat object on another hand or flat object, or an action associated with that act" (Johnston & Schembri, 1999:149).

3.2.1. Implications for the Present Study

We take several points into consideration in the examination of insN/V distinction. To start with, criteria for the distinction of word classes should be analyzed both in the sequential and simultaneous tiers of signs. For instance, a signer might use both hands, his head and his torso at the same time to convey his message. Since each of those parts of the body are used simultaneously, they require to be analyzed separately in order to see whether they have any contribution to sign distinction. In other words, any kind of derivation to a different lexical category might happen through simultaneous morphology as well as sequential morphology in a sign language. As for the morphological marking on sign classes, Johnston (2001) says:

> In particular, many signs may be used in context as nouns or verbs without any apparent overt morphological marking of grammatical sign class. Lexical semantics, the context of utterance, the co-text and the immediate syntactic environment (the presence and co-occurrence of pronoun, adverbs, quantifiers, etc.) mean that the ambiguity or lack of clarity is rarely a problem. (p.236)

This study places phonological and morphological criteria to in the center in distinguishing instrument nouns from instrumental verbs. It tries to answer the question whether there are any clues for the derivation from one word class to another through phonological and morphological pointers, and, it further analyzes the morphology of N/V pairs through classifier constructions.

3.2.2. Noun-Verb Distinction in Sign Languages

Phonologically identical pairs have been reported as having the same handshape, movement, location and orientation by Stokoe et al. (1965) for ASL. These pairs have been investigated in some other sign languages, as well. Among these languages are Auslan (Johnston, 2001), Quebec Sign Language (QSL; Voghel, 2005), Italian Sign Language (LIS; Pizzuto & Corazza, 1996). Later, similar studies were conducted for Austrian Sign Language (ÖGS; Hunger, 2006), Sign Language of the Netherlands (NGT; Schreurs, 2006), Russian Sign Language (RSL; Kimmelman, 2009), Israeli Sign Language and Al-Sayyid Bedouin Sign Language (ISL & ABSL; Tkachman, 2012). We benefited from those studies in terms of their data collection methods, organization of data samples, outcomes and drawbacks.

3.2.3. Previous Studies on Noun-Verb Distinction in Sign Languages

Former studies were conducted in several sign languages under the topic of ‘semantically and/or formationally related N/V pairs’. In this section, we provide an overview of the results which were yielded from the studies on the distinction of

insN/V pairs. There are three phonological distinguishing features cited in the literature review. These are (i) length, (ii) repetition and (iii) mouthing.

3.2.3.1. American Sign Language

The very initial research on these features was made on ASL. Supalla and Newport (1978) analyzed instruments as nouns and instrumental actions as verbs, which is the same semantic category chosen for our study. They argued that these N/V pairs are identical in terms of their handshape, location and orientation. They claimed that nouns and verbs differ only in their movement. Two characteristics that are determined by movement are the length and the repetition of signs. Lengthwise, a sign might be single or repeated. Regarding duration, a sign might be short or long. This finding set the basis for the following researches and length and repetition have been looked into in sign languages in distinguishing phonologically identical N/V pairs. We benefited from this study, as well, by examining repetition and length in terms of the differences in movement.

3.2.3.2. Australian Sign Language

There is also one NMM which has been argued to be a distinctive feature in distinguishing N/V pairs in addition to length and repetition which we obtain from the hand movements. It was first observed in Auslan and this NMM is mouthing. Johnston (2001) found that mouthing accompanies nouns more than verbs in "isolated signs". By isolation, the author means that the signs are not produced in a natural context, but the signers produce the signs in their citation form. Therefore, the fact that the signs are isolated is a crucial point. The distinction created by this same criterion might get lost or loosen during a natural sign production. However,

our study is not capable of shedding light on this issue since our data is gathered through elicitation and contains isolated signs (see Chapter 5). So, we will look into whether mouthing is a distinctive feature to distinguish instrumental nouns and verbs in TİD through elicited data.

3.2.3.3. Italian Sign Language

Pizzuto and Corazza (1996) investigated noun morphology of LIS where they also compared nouns to verbs in terms of many aspects including their length. They found that nouns are relatively shorter. But, they mentioned neither the frequency of those pairs nor anything about mouthing.

3.2.3.4. Quebec Sign Language

Voghel (2005) analyzed N/V distinction in QSL. She compared QSL to other six sign languages in terms of length and repetition. The previous studies that she presented in her work show that there is a tendency for nouns to be shorter and more repetitive across those sign languages. Her data which were obtained from natural discourse revealed that nouns are shorter and more repeated than verbs, as well. She also looked into the mouthing of sign pairs and reported that nouns are mostly accompanied by mouthing. However, she concluded that an analysis on phonological criteria only might not yield reliable results and she highlighted the analysis of N/V pairs with morpho-syntactic criteria. Voghel emphasizes that nouns and verbs could be distinguished mostly by use of space, negation and possessive constructions rather than length, repetition and mouthing.

3.2.3.5. Austrian Sign Language

Hunger (2006) conducted a research on N/V pairs in ÖGS. The results show that nouns are shorter and more repeated in ÖGS. The ratio of average length of verbs to nouns is 2.2:1, which means verbs are 2.2 times longer than nouns. She has also applied mouthing tests and her findings support the previous findings on the effect of mouthing on N/V distinction which is the following nouns are accompanied by mouthing more than verbs are. Additionally, she investigates possible variation in terms of eye gaze, syntactic environment, but there were no significant results.

3.2.3.6. Sign Language of the Netherlands

Schreurs (2006) studied the nouns and verbs of the NGT. Her question was whether there is a derivational pattern between formally related nouns and verbs in NGT. According to the analysis she made, she concluded that there is no derivational pattern. She found that verbs are shorter and more repeated and nouns are longer. Schreurs further asserts that there is a distinction between the two lexical categories regarding mouthing, but length and repetition do not make any difference.

3.2.3.7. Russian Sign Language

Kimmelman's (2009) research is on N/V distinction in RSL. He found that the phonological and morphological ways of differentiating nouns from verbs in RSL are not systematic. Furthermore, he argues that N/V distinction is not restricted to only a small group of pairs as opposed to what Johnston (2001) suggests for N/V pairs in Auslan. Kimmelman proposes that there is a deeper analysis of nouns and verbs than the shape analysis. His claim is that verbs are more iconic than nouns. While the movement of the noun sign is a phonological component only, the movement of the

verb sign depicts the movement of the action, which makes verbal signs more iconic. Kimmelman's final argument on nouns is interesting in that he states that nouns are more economical. Being economical refers to (i) being shorter and (ii) more frequent at the same time for nouns and the fact that handshapes in nouns are less marked.

Additionally, Kimmelman concludes his view on the iconicity and economy as follows: "The less iconicity and the greater economy of nouns can lead us to the conclusion that nouns are preserved in the lexicon while verbs are created during the speech." (p.2). Lastly, he observes that not only mouthing but also fingerspelling accompanies nouns but mouthing and fingerspelling never occur together with verbs. According to him, this might be related to the semantics of the noun which bears the crucial information of the message.

3.2.3.8. Israeli Sign Language and Al-Sayyid Bedouin Sign Language

Lastly, a comparative research in N/V pairs was conducted for ISL and ABSL (Tkachman, 2012). Tkachman found that ISL makes use of mouthing, movement, length, use of CLs to distinguish nouns from verbs while ABSL does not have such a distinction yet. Like another study on the topic (Tkachman & Sandler, to appear), this study emphasizes the young age of these two languages and also looks into the social factors as well as form related distinctions in N/V pairs.

Table 3. A Comparison of Sign Languages Previously Investigated for the N/V Distinction According to the Results of the Pilot Study[2]

Languages	Repetition	Length	Mouthing
American Sign Language	V: single or repeated N: repeated	V: long N: short	
Australian Sign Language	V: 79.4% single, N:57.2% repeated		N: 69.6% mouthed V: 13.1% mouthed
Italian Sign Language	N: repeated	V: long N: short	
Quebec Sign Language	V: single N: repeated	V: long N: short	N 273 V 155
Austrian Sign Language		Vs 2x longer than Ns	N 92% mouthed V: 50% mouthed
Sign Language of the Netherlands	NA	NA	N (89%) V(22%)
Russian Sign Language	Nouns: 72% repeated, Verbs: single	Verbs: 93% larger than nouns	1.43 (Nouns):1 (Verbs)
Israeli Sign Language	NA	V: long N:short	N: 92% V: 35%
Al-Sayyid Bedouin Sign Language	NA	NA	No mouthing attested in ABSL

[2] The empty cells indicate that these features have not been investigated in the relevant languages. NA means that there is no difference observed in those features.

In summary, this section has provided a brief look into the models for lexical categorization in general, which has been later transferred to sign languages. It also investigates the approaches to lexical categorization in sign languages and their implications for the present study. According to the results of the previous studies, nouns are shorter and more repeated in other sign languages. Usually, verbs are longer and less repeated across those sign languages. As for mouthing, nouns are accompanied with mouthing more than verbs in all sign languages investigated to date.

In the next chapter, we will explain the methodology which we follow for this study. It will give a detailed description of (i) one pilot study of three phases and (ii) the main study including its participants, stimuli, and procedure.

CHAPTER 4

METHODOLOGY

In this chapter, we will outline the methodology followed to collect the data. Our study went through several phases. First, we made a pilot study of three phases and in the light of the findings and experiences we gained, then, we conducted the main study. The pilot study is of great importance for this work since it was where we tested several ways of collecting data for the main study. In Section 4.1., we will give the details for the pilot study we made and Section 4.2. will cover the details of the main study.

4.1. Pilot Study

The pilot study consists of three phases. We worked on the stimulus and the application procedure through all three phases but the participant was the same in all phases.

4.1.1. Participants

There were three people involved in the pilot study: (a) a deaf signer as an informant, (b) an interlocutor and (c) a performer. The participant for the pilot study was a 42 year-old woman who was a signer of TİD. She had congenital deafness. She had deaf relatives and a deaf sibling but her parents were not deaf. She was exposed to TİD at the pre-lingual stage. She was teaching TİD at different levels from nursery to college level at that time. We also had an interlocutor, who was a translator at Beyoğlu Sağırlar Derneği. She was not deaf but had an advanced knowledge of TİD,

in all three phases to whom the signer responded to. Lastly, there was a performer only in the second phase, who performed the actions.

4.1.2. Stimulus

There are different stimuli used in three phases of the pilot study. These are (i) a written text, (ii) performed actions, and lastly (iii) videotaped actions and pictures. Instrumental N/V pairs are the target items in each phase such as SCISSORS/CUT, A-COMB/TO-COMB.

4.1.3. Procedure

This section is an outline of how we worked through the data collection process. We tried different methods in this pilot study to collect data to address the questions on N/V distinction in TİD. The elicitation procedure consists of three phases. These are translation, action reporting and video and picture reporting.

The first phase was a translation from Turkish to TİD through written texts. The informant was given four short paragraphs consisting of four or five sentences and asked to report them in TİD. These paragraphs were aimed to elicit both verbs and their noun counterparts. For instance, one of the paragraphs was about 'running' and there are both noun and verb form of RUN written in the sentences. We took the lexeme 'RUN' in Turkish. Since the informant would translate the text from Turkish to TİD, we assumed that she would translate nouns as nouns and verbs as verbs. In other words, we expected the informant to sign them in accordance with Turkish. A sample text translated to English as follows: "Meltem is a good runner. She runs every morning. She even got a medal last year. When I saw her in the morning, she was running down the road."

In the second phase of the pilot study, there was one deaf informant, one hearing interlocutor who has intermediate knowledge of TİD and one hearing performer. The performer made an action, changed something in the setting or held an object in her hands. The interlocutor asked the following questions to the informant.

- What is on the table?
- What is in X's hand?
- What is X doing?

The informant watched what the performer is doing or what he was holding in his hands or what he put on the table and then answered the questions of the interlocutor accordingly. There was a barrier between the performer and the interlocutor which visually blocked them out from each other, therefore, only the informant saw the actions and the changes so that she could relate them to the interlocutor. In other words, (a) the performer produced an action, the informant watched it and recounted to the addressee what the performer is doing (b) the performer either held an object or placed it on the table and the informant named the object to the interlocutor. The organization of the setting is outlined in Figure 14.

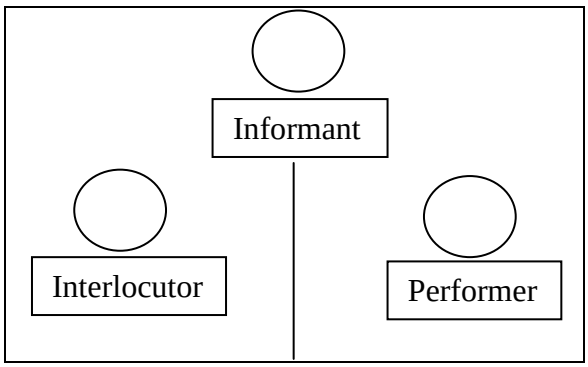


Figure 14. Experimental setting for the second phase

The third and last phase is based on videos and pictures. The informant was shown 10 videos of actions and 10 pictures of objects on a screen. Then, she was asked to sign what she saw on the screen to the interlocutor who did not see the screen. The setting for phase three is given in Figure 15.

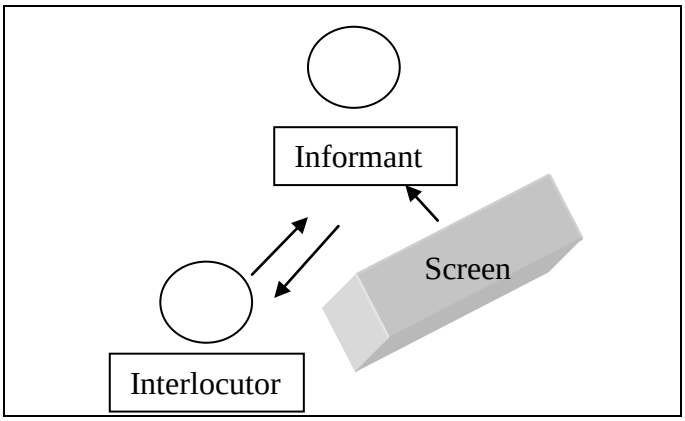


Figure 15. Experimental setting for the third phase of the pilot study

In each phase, ten N/V pairs were elicited from our informant. We extracted nouns and verbs from the videos of the informant. We annotated these items through ELAN (EUDICO Linguistic Annotator) which was developed by Max Planck Institute for Psycholinguistics.

4.2. Main Study

The main study was conducted after three pilot studies were completed. Although the main study is different from the first and second phases of the pilot study, it has much in common with the third phase of it. In the first one, there was one translation text as a stimulus only. In the second one, there was a person performing actions as stimuli for the informant to sign in TİD. However, we used action videos and pictures of objects as stimuli in the third phase. In other words, there was one signer looking at the screen and reporting it to the addressee.

The reason why we used three different tasks in the pilot study but only one task in the main study is that pilot study was a process where we tried different methods and decided on the one which works better. By analyzing and evaluating the three different phases, we eliminated text translation since there was much affect of surrounding spoken language on the elicited material. Then, we developed the procedure in the main study by working on the second and the third phases of the pilot study. We did not apply these two phases separately in the main study given that they have much in common. Instead, we merged them into a single task. In the following subsections, the methodology will be described in detail.

4.2.1. Participants

The data were elicited from 3 male and 1 female TİD signers. There was also one female Turkish-TİD bilingual participant as an interlocutor. All three male informants were born to deaf parents and exposed to TİD at the prelingual period. The female participant was not born to deaf parents but she has a deaf sibling and deaf relatives. She was the same participant of the pilot study. All four informants were from İstanbul. Two of the males were high school graduates and one was a graduate of primary school. The average age was 32. There was also one interlocutor, who was originally working as a translator at Beyoğlu Sağırlar Derneği (Beyoğlu Deaf Association). She helped us during the data collection by asking questions and responding to the reactions of the informants.

Table 4. Characteristics of the Informants

Informants	Gender	Age	Education	Born to deaf parents	Exposed to sign language at the prelingual stage
1	Male	24	Left from high school	Yes	Yes
2	Male	28	High school	Yes	Yes
3	Male	32	High school	Yes	Yes
4	Female	42	College	No	Yes

Initially, we focused on the characteristics of being born to deaf parents while finding our informants. We thought their sign productions would be more natural therefore more reliable since they were exposed to sign language at the prelingual stage and they are supposed to have gone through the developmental stages of language acquisition. It is known that the age of first exposure to sign language is of great significance (Mayberry, 2006). However, deaf people whose parents are both deaf are quite rare. Either one or both of their parents are usually hearing. Since the number of participants turned out to be so small and we had not been able to find any female participant, we decided to include the last participant who was a female though she was not born to deaf parents and we made sure that she was not an outlier among other male, deaf-of-deaf informants.

As for the gender issue, the number of males and females as informants are not equal in our study. Our one female informant is not only different from other informants in terms of gender, she is also different from them in terms of education, age and having hearing parents. However, there are studies which show that gender is not a factor in sign language development (Mayberry, 2002). On the other hand, there is not any study, to my knowledge, which specifically discusses the difference in the sign production caused by gender.

Lastly, each informant was required to fill a form which informs them about the general outlines of the study. This form was approved by the Ethics Committee on Human Participants of Boğaziçi University in May 2012. The nformants gave permission for us to use their linguistic productions in academic works.

4.2.2. Stimulus

The stimulus consisted of 40 action videos for the elicitation of verbs and 40 pictures of objects for the elicitation of nouns. Each informant was presented 80 items in total. 60 items of them were the target ones, 30 being verbs and 30 being their corresponding nouns (see Table 5). 10 videos and 10 pictures were included in the study as dummy items. In other words, the informants were presented with 80 items, 60 of which were the target items.

Table 5. An Example from Target Instrumental Verbs and Corresponding Nouns Used in the Study (see Appendix A for the full list of nouns and verbs).

Instrumental Verbs	Nouns
OPEN-WITH-A-KEY	KEY
CUT-WITH-A-KNIFE	KNIFE
STIR-WITH-A-MIXER	MIXER
GRATE	GRATER
COMB	COMB

The extra items were included in the experiment to avoid any kind of pattern to be developed by the participants as to the design or the target of the study. There were objects such as BOOK, VASE for the noun category and such actions as READ, SLEEP for the verb category as dummy items. These items were not analyzed and therefore not included in the results section. The fillers we used consisted of also either pictures of objects or videos of actions which were again instruments to elicit either nouns or verbs. Though the dummy items could have been targeted at eliciting, at

least, other parts of speeches other than nouns and verbs, i.e. adjectives, we inserted irrelevant pictures and videos. Since the elicitation of other parts of speech is hard and quite problematic, we chose the fillers from the same two lexical category: (non-instrumental) nouns and verbs.

4.2.3. Procedure

The main body of data in the study is based on videos and pictures that we shot. In videos, there was a person performing actions with different instruments. In pictures, there were objects placed on a table (see Figure 16).

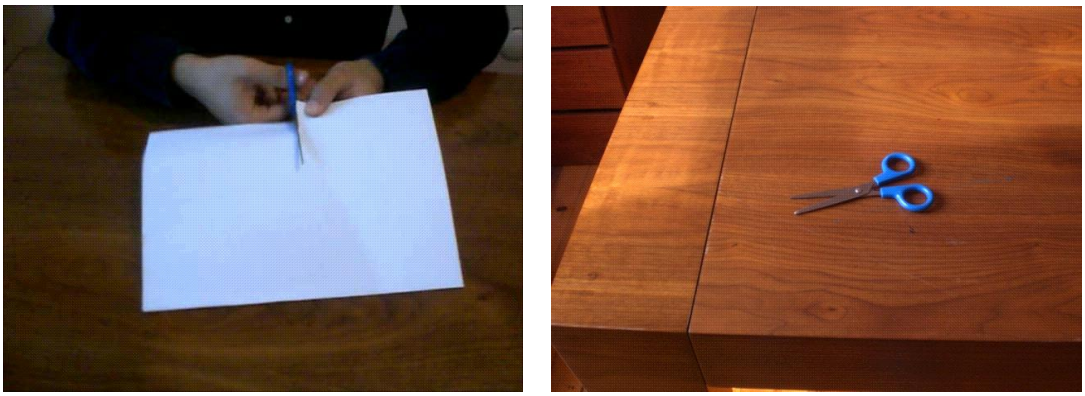


Figure 16. (a) A still from an action video (b) a picture of an object.

The pictures of objects were aimed to elicit nouns and the action videos were aimed to elicit verb forms. Our motivation was that nouns are the referents for objects and verbs are the referents of the actions crosslinguistically as assumed by lexical semantics.

The data was collected at Beyoğlu Sağırlar Derneği. Each time, there were two people for the experiment: one informant and one interlocutor. We were also in the room as a facilitator for the flow of stimuli and we were responsible for two cameras, one for the frontal plane, and one for the lateral plane. The informant and

the interlocutor sat across a table. The informant watched the stimuli on the screen and narrated them in TİD to the interlocutor. The setting for all four participants is given in Figure 17:

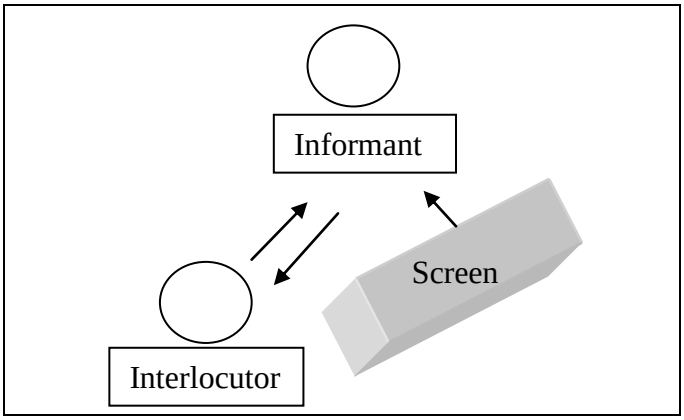


Figure 17. The setting for the main experiment

The participants were presented a PowerPoint presentation where those videos and pictures were randomly sequenced. In other words, verbs and their noun counterparts do not follow each other. The videos and the pictures were on display only for 2-3 seconds in each slide on the screen. Informants were expected to answer one of following questions by looking at the screen: "What is he doing?" when a video was on display or "What is on the table?" when there was a picture on the screen.

We gave a break of 10-15 seconds after each item was presented. In those breaks, signers were to narrate what they saw on the screen to the interlocutor who was not able to see the screen at that time. Each informant watched 40 videos of actions or saw 40 pictures of objects in a mixed order on the screen and signed 80 items to the interlocutor.

We grouped the items into two sets. In each set, there were 40 items (20 verbs and 20 nouns). 20 verbs consisted of 15 randomly sequenced instrumental verbs and

5 dummy verbs. 20 nouns consisted of 15 target nouns and 5 dummy nouns (see Appendix A). Two informants started their tests with the first set and two of the informants started their tests with the second test. They were told to narrate what they saw in the action videos, after which they were shown the items in the first set. Nothing was told them regarding the happening time of the actions. But, they were asked "What is he doing?" Before the second set was presented, they were told the actions had happened during a visit of the actor in the videos on the previous weekend. We aimed to see the difference between narration of a past action and a present action if there were any in terms of phonological and morphological properties of the verbs. The reason for such organization of the data is the assumption that verbs are hard to elicit in an aspect free form. By targeting two different aspectual states at the same time, we aimed to observe the effect of aspects on verbs and develop better insights as to the nature of their lexical forms.

4.2.4. Methodological Issues

We analyzed the videos of informants with the multimedia coder ELAN. It provided the system for recording the duration of signs in milliseconds or in frames and to count the repetition of each items. We also investigated mouthing of the N/V pairs; predicate types and classifier types in verbs, but, these analyses were made in Excel Worksheets.

As for the phonological analysis of the data, 120 items of verbs and 120 items of nouns produced by four informants were evaluated separately and individually with regard to their repetition, length and mouthing as we discussed in section 2.1.1. We will give the details of each criterion in the following sections.

4.2.4.1. Coding Repetition

For this category, we looked into whether nouns and verbs consisted of single or repeated movements. We coded the presence of repetition of an instrumental verb and its noun counterpart separately. Then, we compared nouns to verbs according to the list which shows whether each item was repeated or single by the informants. For instance, the noun KEY has a repeated movement whereas its verb counterpart OPEN-WITH-A-KEY consists of a single movement.

4.2.4.2. Coding Length

There are two issues regarding the measurement of length. The first one is the measurement unit. In ELAN, each second is divided into 10 frames. We recorded the length of each item according to their duration. While measuring the length of the items in the study, we listed how many frames they last. For instance, OPEN-WITH-A-KEY lasts 6 frames whereas the noun KEY lasts 4 frames. With regard to milliseconds, these items last 36 (6x6) and 24 (6x4) milliseconds respectively.

The second issue in measuring length is to decide when and where signs start and end. In other words, it is the issue of indicating boundaries of words. Following two different phonological frameworks by Sandler (1986) and Johnston and Liddell (1984, 1989), we defined the boundaries where location, handshape and movement of a sign overlap both at the beginning and at the end of the sign. Mouthing also helps determining the word boundary. The duration of nouns and verbs were determined in this way and analyzed accordingly.

4.2.4.3. How to Code Mouthing?

As we mentioned in 2.1.1., mouthing is a distinctive feature for N/V pairs. For this criterion, nouns and verbs were listed according to whether they were accompanied with mouthing or not. The number of nouns with mouthing was compared to the number of verbs with mouthing.

4.2.4.4. Coding of Classifier Types

There are three basic types of CLs: SASS, entity and handling (Supalla, 1986) as we summarized in 2.2.3. In nouns and verbs, we investigated which types of CLs were available in instrumental N/V pairs, and presented the results in percentages.

We also looked into whether there is any noun incorporation in verbs. If there are any incorporated nouns, we will further analyze which types of arguments are incorporated.

Verbs are classified according to their complexity as lexical predicates and classifier predicates (Özyürek & Perniss, 2011) (see Section 2.2.4.). We distinguished lexical predicates from classifier predicates and presented the results in percentages.

4.2.4.5. Analysis of Use of Space

Use of space is a feature used to distinguish nouns from verbs (as explained in Section 2.2.5). Directionality, body contact (or location of the sign), in sign pairs were investigated in this category as proposed for sign language word classes.

4.2.4.6. Analyzing Iconicity

Lastly, we investigated how nouns and verbs are iconic and how they differ in their iconicity. In this category, we compared iconic use of contact, palm orientation, and location of the N/V pairs (see Section 2.2.6). We compared nouns to verbs to see which group show more iconicity.

This chapter has provided a detailed account of how many participants contributed to our study, which stimuli were used, how we collected the data and the parameters to evaluate the phonological and morphological criteria for the N/V distinction.

In the next chapter, we will present the results of the study with regard to each criterion that we listed in both Chapter 2 and 4. The results will be given in numbers and/or percentages in the light of coding methods that we have provided in this chapter.

CHAPTER 5

RESULTS

In this chapter, we will outline the results of the study which looks into both phonological and morphological characteristics of insN/V pairs in TİD. The phonological analysis is mainly based on repetition, length and mouthing of insN/V pairs. The morphological analysis is based on the classifier types that accompany insN/V pairs and their corresponding nouns, iconicity, and use of space. These features were chosen as a result of a close examination of previous studies (see Section 3.2.2.). 120 pairs of nouns and verbs in total which were elicited from four informants were analyzed in terms of all the criteria listed above.

5.1. Phonological Analysis

The results of the analysis of the data showed that instrumental nouns and verbs in TİD are different from each other in terms of their repetition, length and mouthing patterns. There are findings which are parallel to what have been suggested for other sign languages regarding these three criteria (see Section 2.1.3). What is common across these languages is that nouns are shorter in duration; repeated in movement, accompanied more with mouthing.[3] On the other hand, some findings for insN/V pairs in TİD do not support the outcomes of these studies. We will first present the outcomes of the result of the pilot study in Section 5.1.1 since it is of great significance to the development of our methodology and the unexpected results it yielded despite limited set of data. Secondly, we will outline the results of the main study in Section 5.1.2.

[3] Some of the features have not been studied in some languages. Mouthing is a missing feature in ASL account whereas length is missing for Auslan. Results on LIS are based on only length. QSL, ÖGS, NGT, RSL, ISL, ABSL are the languages of which all three phonological criteria were investigated.

5.1.1. Results of the Pilot Study

In our pilot study, we looked into only the relative frequency and the length of instrumental N/V pairs through a sample data elicited from one informant. The outcomes of the pilot study showed that nouns denoting instruments in TİD were shorter than verbs in terms of duration as it has been argued for several other languages (Voghel, 2005). However, the pilot study also revealed that nouns are less repetitive than verbs in TİD as opposed other sign languages listed. This finding was not supported by the main study, though. Therefore, we did not elaborate on why nouns were less repetitive in the pilot study. We rather attributed it to the sample size which is rather small. Furthermore, nouns are accompanied with mouthings more than verbs. Based on Voghel's (2005) and Tkachman (2012) comparison of languages regarding the phonological behavior of nouns and verbs, TİD nouns and verbs are compared to nine other sign languages, given in Table 6.

Table 6. A Comparison of Sign Languages Previously investigated for the N/V Distinction According to the Results of the Pilot Study

Languages	Repetition	Length	Mouthing
American Sign Language	V: single or repeated N: repeated	V: long N: short	
Australian Sign Language	V: 79.4% single, N:57.2% repeated		N: 69.6% mouthed V: 13.1% mouthed
Italian Sign Language	N: repeated	V: long N: short	
Quebec Sign Language	V: single N: repeated	V: long N: short	N 273 V 155
Austrian Sign Language		Vs 2x longer than Ns	N 92% mouthed V: 50% mouthed
Sign Language of the Netherlands	NA	NA	N (89%) V (22%)
Russian Sign Language	Nouns: 72% repeated, Verbs: single	Verbs: 93% larger than nouns	1.43 (Nouns):1 (Verbs)
Israeli Sign Language	NA	V: long N:short	N: 92% V: 35%
Al-Sayyid Bedouin Sign Language	NA	NA	No mouthing attested in ABSL
Turkish Sign Language	N: single V: repeated	N: short V: long	N: 71% V: 20%

Additionally, the study indicated that there was a further distinction between definite nouns and indefinite nouns, with the former being less repetitive. The issue of definiteness was not initially under the scope of this pilot study. But, it turned out to be that definiteness is closely related to the criterion of repetition. Therefore, we decided to include it among the morphological factors in N/V distinction. We left further discussion on definiteness to section 5.2.6.

To conclude, the pilot study helped to determine a research methodology for the main body of research. Furthermore, it raised the two following questions: (1) Is TİD different from other sign languages regarding repetition? (2) Is it because the sample is so small that it leads incorrect assumptions? The motivation for the first question was that nouns are more repeated than verbs and verbs are mostly single-movement-signs in other sign languages whereas it is the other way around in TİD. The data collected for the pilot study contained productions of one signer only. And, these mainly consisted of a limited number of items up to 20. This decreased the reliability of the test, which, in return, might have caused wrong generalizations for the investigation of N/V pairs. The answers for these questions were left to the findings of the main study.

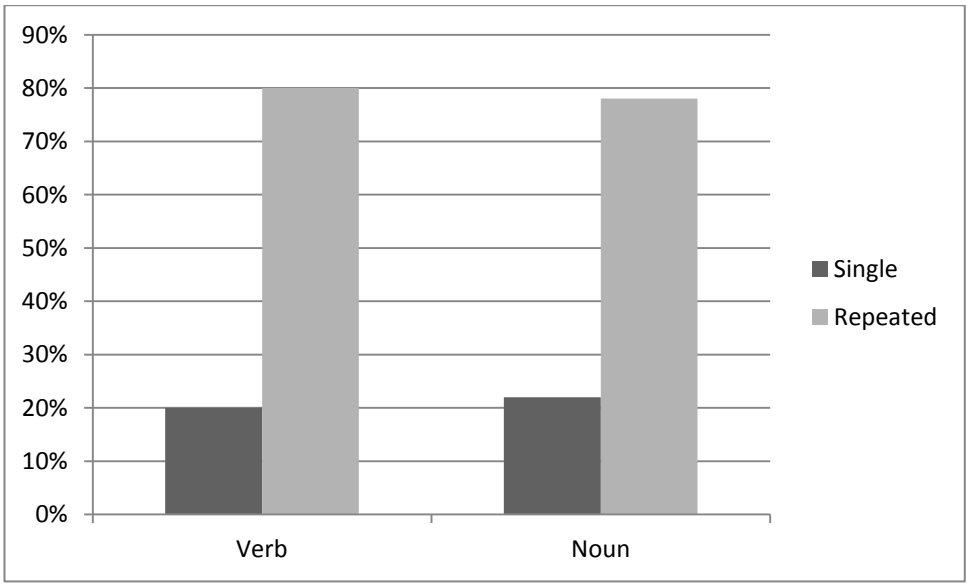
5.1.2. Results of the Main Study

The main body of data consists of 240 target items in total. 120 of them are the responses to videos (instrumental verbs) and 120 of them are the responses to pictures (nouns denoting instruments). 60 responses from each signer were taken. The analysis of the main study was conducted on these 240 tokens.

5.1.2.1. Repetition

Signs might be grouped differently for their movement patterns. However, they are of two types according to the frequency in their movement: they are either single or repeated. This is the classification used for N/V distinction in sign languages. A single-movement-sign consists of one movement only while a repeated sign can be of any number of the same movements. This phenomenon is called repetition or frequency. It is the first criterion we investigated to find out the phonological distinction between instrumental verbs and their noun counterparts. As shown in Table 5, there is no difference between instrumental nouns and verbs in terms of repetition. They are almost equal in number: 26 of 120 (80%) instrumental verb tokens have a single movement whereas 24 of 120 (78%) instrumental noun tokens have single movement (see Table 7). More importantly, this is something not parallel to the findings of our pilot study. In the pilot study, we found that verbs are more repeated whereas nouns mostly consist of single movement (see Section 5.1.1).

Table 7. Repetition Analysis of N/V Pairs in TİD in Percentages



There are four different situations for each insN/V pair in terms of their comparative repetition (see Table 8). In the first one, both noun and the verb are repeated. The second one includes both nouns and verbs consisting of single movement. In other two cases, one of these lexical categories is single whereas the other one is repeated. The table below displays that the majority of insN/V pairs belong to the first group.

Table 8. Different Situations for Each insN/V Pairs

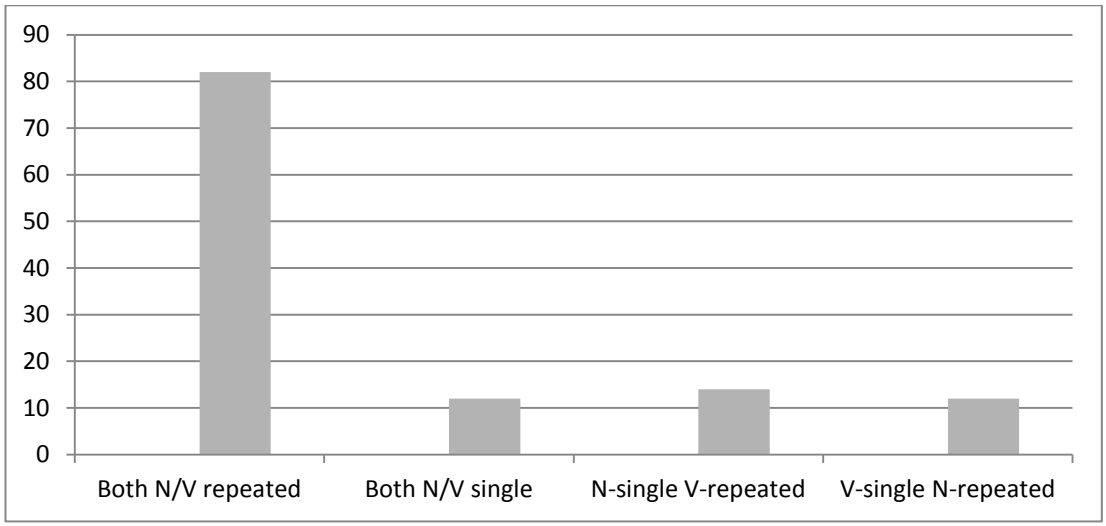


Table 9 below shows the differences between the insN/V pairs produced by four different informants. It is clearly seen that nouns denoting instruments have repeated movement more than instrumental verbs except for one informant. The results of each informant are quite similar to each other. Moreover, the difference between insN/V pairs is so few in number that it does not support the argument that repetition is an effective parameter for insN/V pair distinction in TİD.

Table 9. Individual Differences in the Repetition of insN/V Pairs

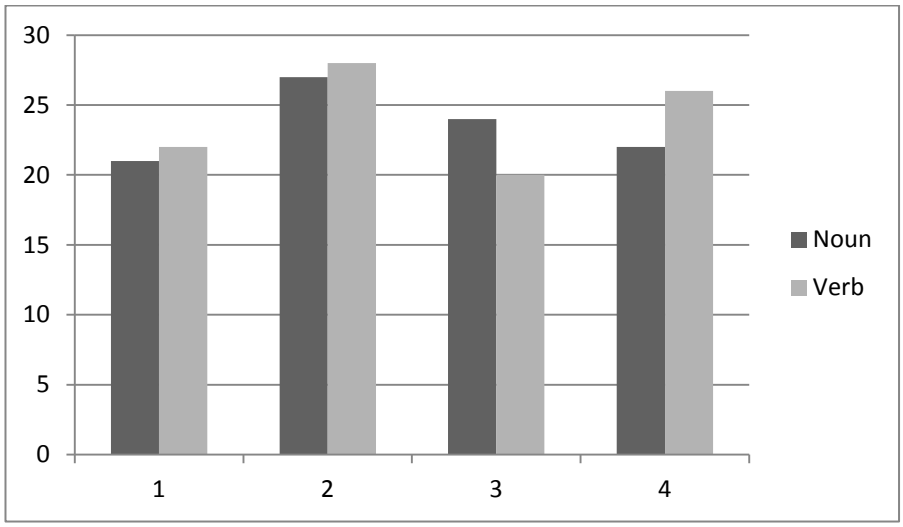


Table 10 provides the descriptive statistics of the overall results in repetition. The central tendency both in nouns and verbs is between 2 and 3, which means there is little distinction (0,5) in terms of the average number of repetitions. Both groups have nouns and verbs that consist of single-movement.The maximum number of repetitions is close to each other in two groups, which is 6 for nouns and 8 for verbs. Because both central tendency and dispersion results are so close to each other, the standard deviation (STD) for each group is also close to each other. STD for instrumental verbs are only above 0.5 than nouns denoting instruments.

Table 10. Central Tendency, Dispersion and Spread in the Repetition of insN/V Pairs

	Noun	Verb
Mode	2	2
Median	2	3
Mean	2,458333	2,9
Min	1	1
Max	6	8
Range	5	7
Standard deviation	1,166016	1,610887

We would expect to find nouns with repeated movements and verbs with single movements in the light of findings from the studies of other sign languages listed in

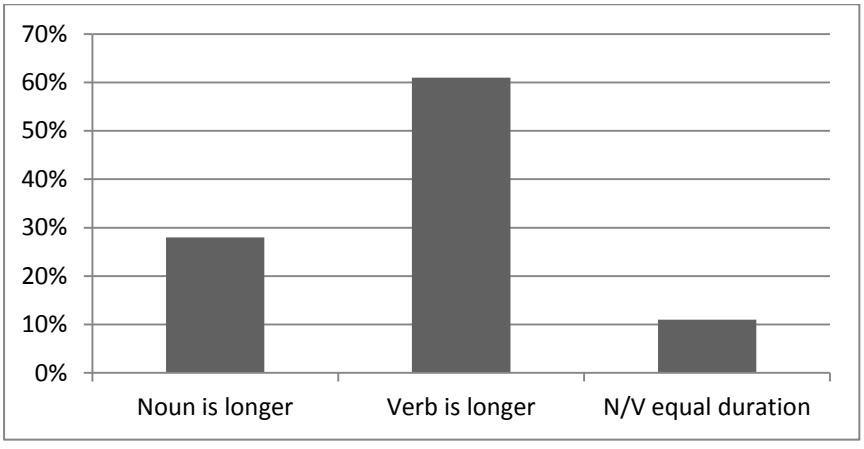
Table 4. Surprisingly, the numbers of repeated nouns and verbs are almost the same in TİD. A discussion on the possible reasons of this liability of TİD will be presented in Chapter 6.

Here are some tokens with numbers related to repetition. One of the most repeated verbs is GRATE with 8 repetitions, and one of the most repeated nouns is NAIL-FILE with 6 repetitions. There are examples of unrepeated signs both in verb and noun categories. They are listed of a single repetition: CLEAN-WITH-A-CLOTH and LIT-WITH-A-LIGHTER among verbs; CAMERA and COIN among nouns.

5.1.2.2 Length

We looked into the length of N/V pairs as the second criterion for the phonological analysis in this study. Results show that nouns are shorter than verbs in TİD with a high percentage. 61% of the time nouns are shorter; 28% verbs are shorter; and 11% they are of same length (see Table 11).

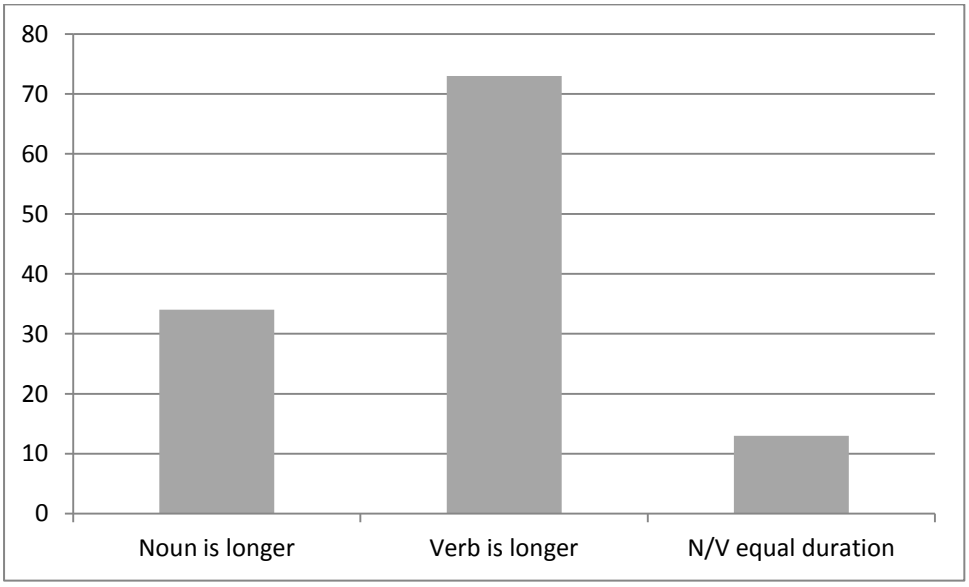
Table 11. Length Analysis of insN/V Pairs in Percentages



Among 120 insN/V pairs, more than 70 pairs have the verb as the longer member whereas the number of longer nouns is just above 30 (see Table 12). Regarding that

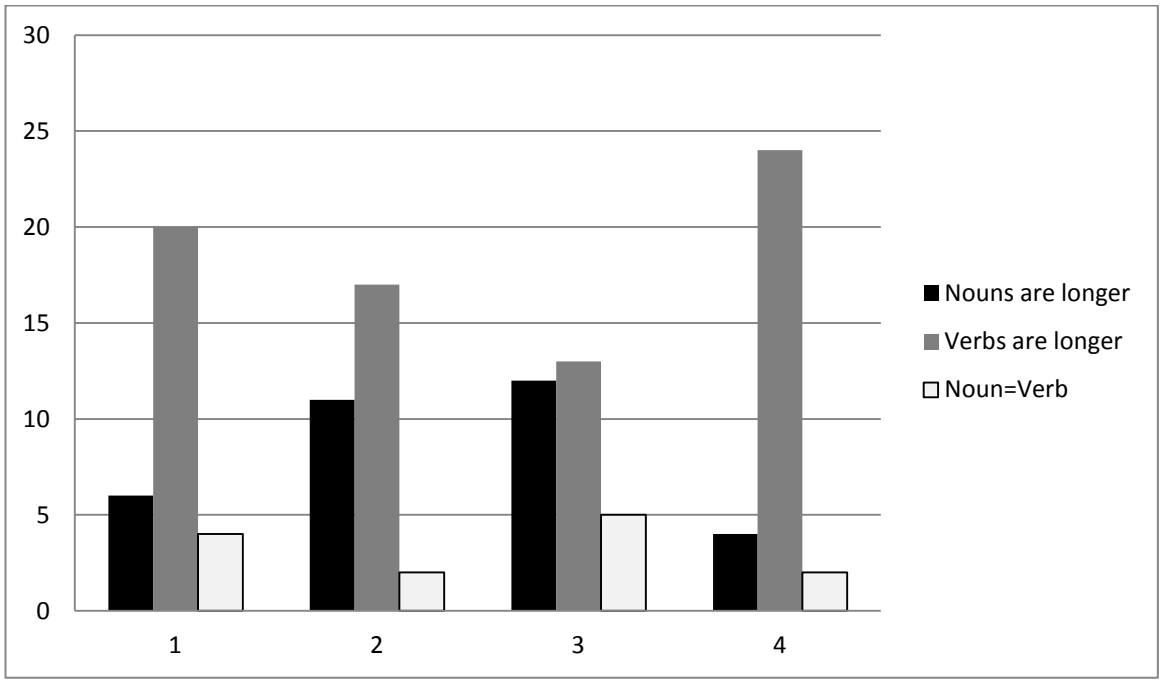
the number of insN/V pairs of equal length is quite low, we could say instrumental verbs are longer both in the individual level and at the overall group level.

Table 12. Differences in Length for Each insN/V Pair



In TİD, instrumental verbs are longer than their noun counterparts. When the individual data is examined, this is also the case. The number of verbs longer than nouns is higher for all four informants (see Table 13). However, there is a high variance among informants. For instance, the number of longer verbs is almost equal to the number of longer nouns in the data from informant 3 whereas the data form informant 4 indicate that the number of longer verbs is almost 5 times higher than the number of longer nouns. Lastly, there are 13 insN/V pairs that are equal in their length in total. This variance among informants might necessitate a closer examination of length with a larger body of data, though we might accept that there is a liability for instrumental verbs to be longer than nouns denoting instruments in TİD.

Table 13. Length Analysis of insN/V Pairs at the Individual Level



In Table 14, descriptive statistics for the length of instrumental verbs and their noun counterparts is presented. According to the table, the values for central tendency are not so close to each other as in the analysis of repetition. 10-frame is the most frequent length found in nouns denoting instruments whereas it is 15 for instrumental verbs. The average length for verb is almost 4 point above the average length of nouns, which is quite high. The shortest item belongs to the verb group by 2-frame, and the longest item again belongs to verb group by 50-frame. The range, difference between the shortest and the longest item, is 48 in verbs and 31 in nouns. The analysis through descriptive statistics shows that verbs are longer than nouns whereas no such result is obtained for repetition.

Table 14. Central Tendency, Dispersion and Spread in the Length of InsN/V Pairs

	Noun	Verb
Mode	10	15
Median	9	13
Mean	10,50833	14,44167
Min	3	2
Max	34	50
Range	31	48
Standard deviation	5,991585	8,345357

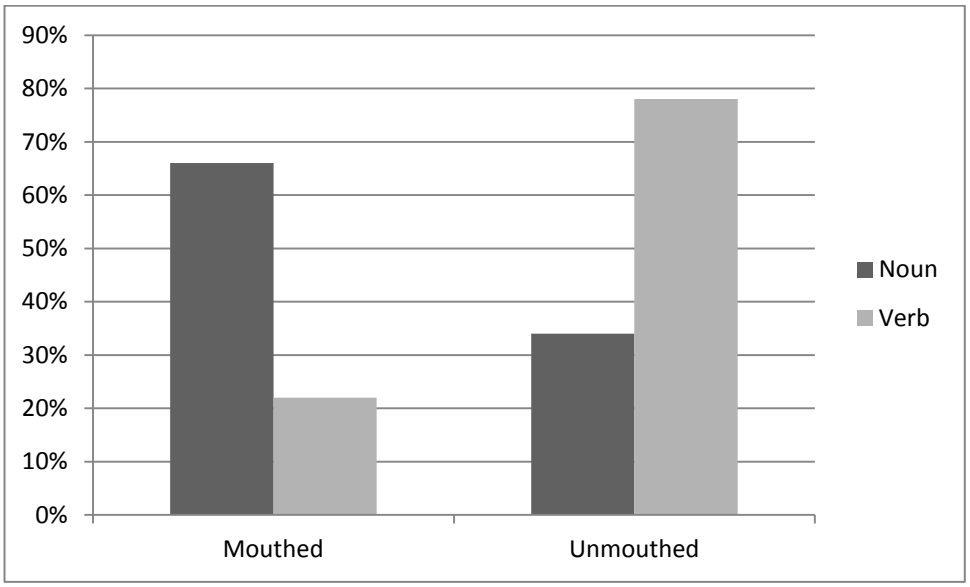
There were also extreme examples of N/V pairs in terms of length. For instance, COIN is a three-frame-long noun whereas its verb counterpart SCRATCH-WITH-A-COIN is 12-frame-long. This is the shortest noun that we encountered. On the other hand, the longest verb is CLEAN-WITH-A-SWEEPER with a 50-frame-long while its noun counterpart SWEEPER is 10-frame-long. Pairs of same length, which have the equal duration for its nouns and verbs, were scattered around the data, so there was no alignment with the length of those pairs. In other words, they can be very long or very short. The pair of STAPLE vs. STAPLER is the one the longest duration is recorded by 25 frames. TALK-ON-THE-PHONE vs. PHONE pair is the shortest one by 4 frames.

5.1.2.3 Mouthing

Mouthing is the third criterion for identifying the N/V distinction in the phonological analysis of instrumental N/V pairs in TİD. Nouns have been found to accompany mouthing more than verbs in previous studies conducted for other sign languages. For instance, LIGHTER has been found to be mouthed by all four informants whereas LIGHT-WITH-A-LIGHTER is not mouthed by any of them in TİD. It is an expected outcome since nouns are accompanied by mouthing more than verbs in all the other sign languages which were looked into in terms of mouthing.

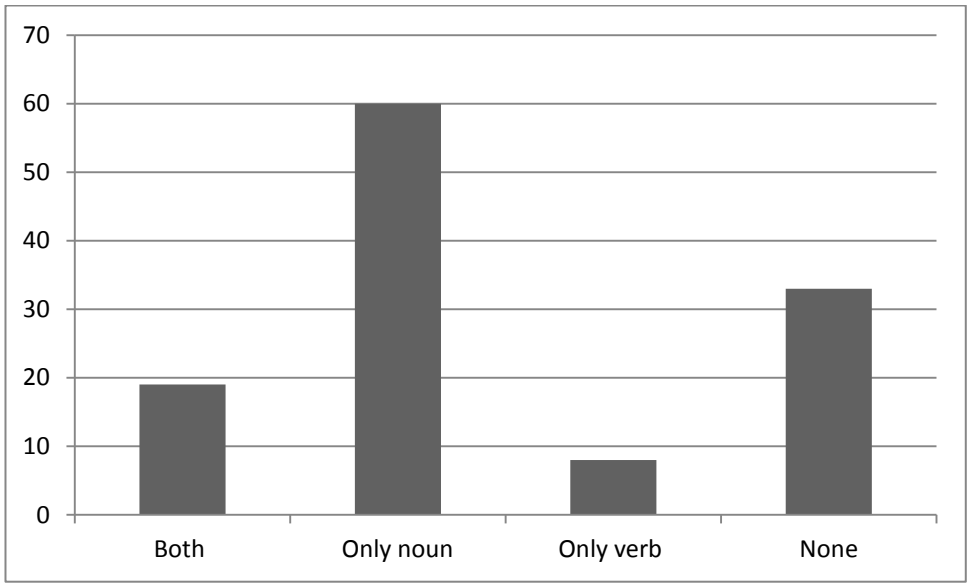
Table 15 indicates that 66% of the nouns denoting instruments are accompanied with mouthing whereas only 22% of the instrumental verbs are accompanied with mouthing. This data reveal that mouthing accompanies nouns denoting instruments three times more than instrumental verbs.

Table 15. Mouthing Analysis of insN/V Pairs in terms of Percentages



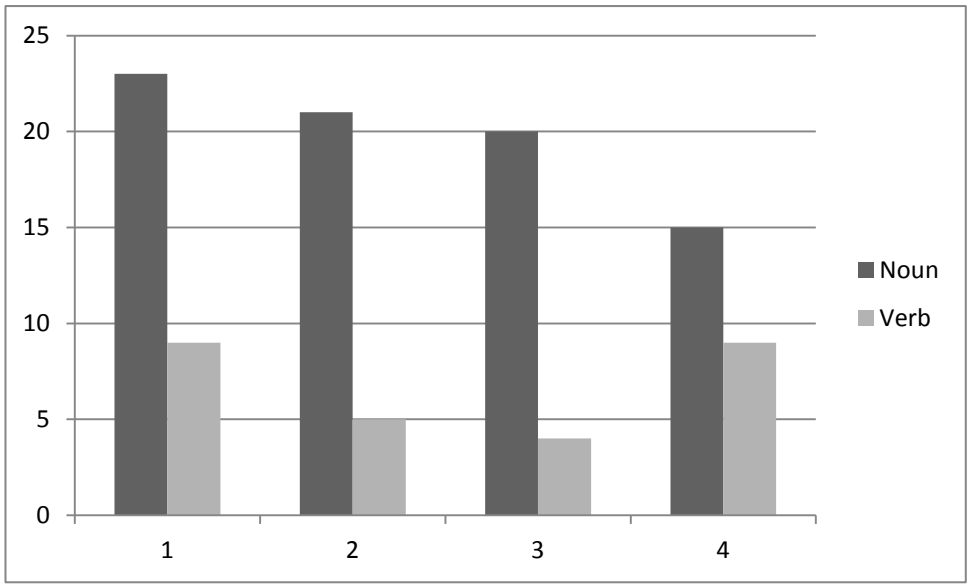
There are four different cases of the mouthing of each insN/V pair. In the first two cases, either the noun or the verb is accompanied with mouthing. In other cases, members of a pair could be both mouthed or neither of them could be mouthed. Table 16 presents that noun is the lexical category that is mostly mouthed within a pair.

Table 16. An Analysis of Mouthing at the Pair Level



We observed that noun is always the more mouthed category even though there are differences among informants in the number of mouthed nouns vs. mouthed verbs.

Table 17. An Analysis of Mouthing at the Individual Level



Our study displayed parallel findings to the behavior of nouns in other sign languages. The analysis in mouthing of nouns and verbs has revealed that 66% of the corresponding nouns are mouthed whereas only 22% of the instrumental verbs are

mouthed (see Table 18). This is parallel to what Johnston (2001) suggests for Auslan, who reports that 69.6% of the nouns are mouthed whereas 13.1 % of the verbs are mouthed; it is also in line with Voghel (2005) for LSQ and Kimmelman (2009) for RSL. TİD displays similar characteristics to other sign languages investigated to date in that nouns outnumber verbs in mouthing.

Table 18 compares ten sign languages in terms of three parameters. We put our data in the table as well to display the N/V pairs in TİD among other sign languages. According to the table, TİD resembles other sign languages in terms of length distinction and mouthing. However, it does not show similar characteristics in terms of repetition as also implied/predicted by the pilot study. Therefore, it might not be the size of the sample, rather nouns in TİD displays a different behavior than any other sign language in the list.

Table 18. The Comparison of TİD with Other Sign Languages in terms of Phonological Criteria After the Main Study

Languages	Repetition	Length	Mouthing
American Sign Language	V: single or repeated N: repeated	V: long N: short	
Australian Sign Language	V: 79.4% single, N:57.2% repeated		N: 69.6% mouthed V: 13.1% mouthed
Italian Sign Language	N: repeated	V: long N: short	
Quebec Sign Language	V: single N: repeated	V: long N: short	N 273 V 155
Austrian Sign Language		Vs 2x longer than Ns	N 92% mouthed V: 50% mouthed
Sign Language of the Netherlands	NA	NA	N (89%) V(22%)
Russian Sign Language	Nouns: 72% repeated, Verbs: single	Verbs: 93% larger than nouns	1.43 (Nouns):1 (Verbs)
Israeli Sign Language	NA	V: long N:short	N: 92% V: 35%
Al-Sayyid Bedouin Sign Language	NA	NA	No mouthing attested in ABSL
Turkish Sign Language	NA	N: short V: long	N: 66% V: 22%

There are two other interesting facts about the mouthing of instrumental N/V pairs in TİD. The first one is the use of a Turkish aspect marker. The signers mouth verbs with the Turkish progressive aspect marker *–(I)yor* while describing actions 89% of the time. This is parallel to how a native Turkish speaker would narrate an action that is taking place at the time of utterance. The second one is related to the morphology of instrumental verbs. An instrumental verb may accompany the mouthing of the nouns which are in its argument structure. These arguments are either theme arguments (68%) and/or the instrument argument of the verb (40%), which will be presented in detail in morphological analysis presented in 5.2.

5.1.2.4 Fingerspelling

Fingerspelling is the representation of signs through the manual alphabet which is in line with the letters of surrounding spoken language (Brentari, 1998). It is an important subject not only in phonology but also in morphology since it might also function as a lexicalization process. However, in our study, fingerspelling is a pure repetition of signs to symbolize Turkish equivalents, therefore, it is a part of phonological analysis.

Fingerspelling had not initially been a part of the phonological analysis that we envisaged. Later, we realized that, when an item is not understood by the interlocutor, native signers are likely to fingerspell the item if it is an object. However, they keep signing the item until it is understood by the addressee if they are signing an action. Though the numbers of these occasions are quite low in our data, it still raises the question whether fingerspelling is preferred more when the item is a noun. In other words, nouns may be followed by fingerspelling while verbs are not.

5.2. Morphological Analysis

The morphological analysis we made focuses on instrumental N/V pairs in terms of CLs. Therefore, we investigated classifier types that are parts of nouns and verbs, predicate types, and mouthings of the arguments that are found in the data. We also analyzed iconicity, definiteness and the use of space instrumental N/V pairs. The findings will be presented in the following subsections.

5.2.1. Use of Classifiers and Classifier Types

5.2.1.1. Use of classifiers

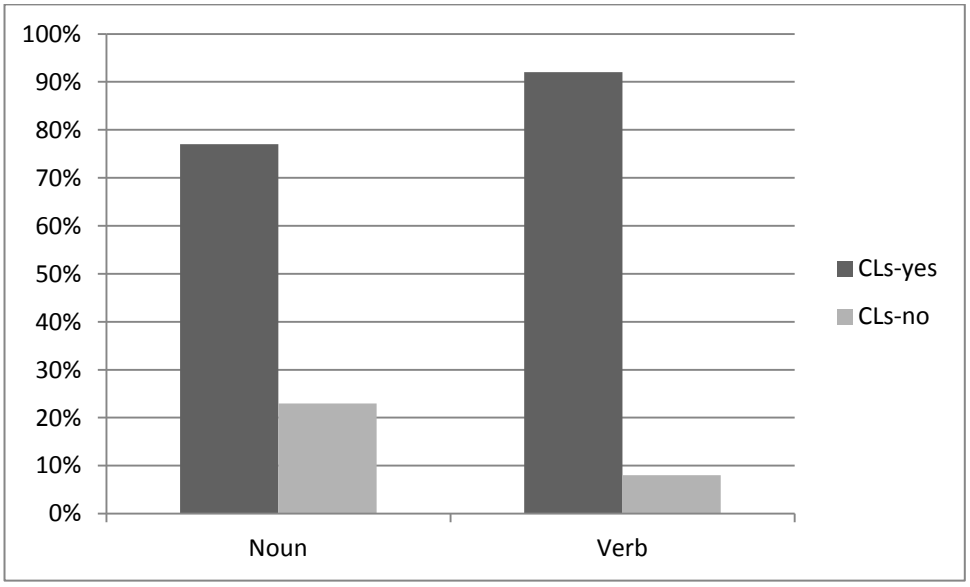
Özyürek and Perniss (2011) argue that size and shape or the handling of the referent can be denoted by the classifier in a predicate. For example, GRATE has the handling of the referent in its verb form, as illustrated below:

Figure 18: GRATE with a handling classifier

The employment of classifiers by insN/V pairs is quite close to each other in terms of percentages verb having the higher percentage. Table 19 presents these ratios and it can be seen that the number of CLs is almost the same for both groups which

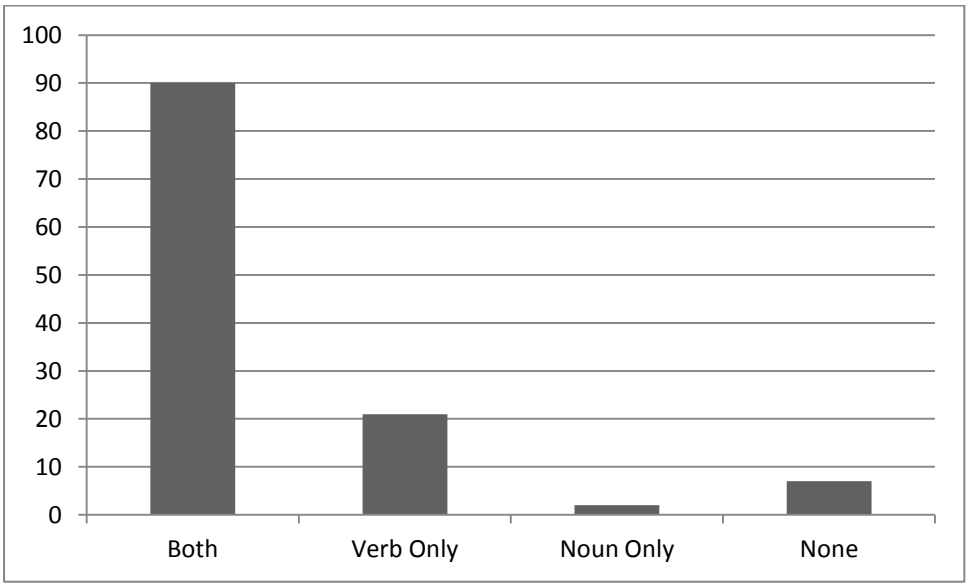
indicates there might be no difference at all between insN/V pairs as to the use of CLs.

Table 19. Presence of CLs in insN/V Pairs



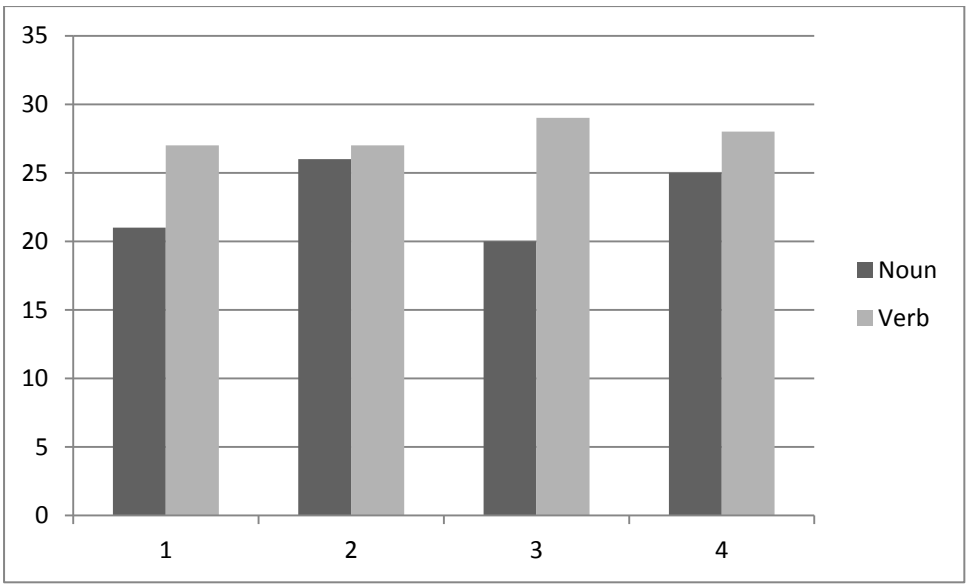
There are four different situations for the insN/V pairs in terms of the presence of CLs. Table 20 outlines the pairs in which (i) both members have CLs, (ii) only verb has a CL, (iii) only noun has a CL, and (iv) none of them has a CL. 90% of the pairs have both CLs, which points out that the use of CLs is quite common among instrumental verbs and nouns denoting instruments.

Table 20. An Analysis of Presence of Classifiers at the Pair Level



At the individual level, verb is the lexical category which has more CLs in number across all four informants. However, there are no big gaps between nouns and verbs except for informant 3 (see Table 21).

Table 21. Presence of CLs at the Individual Level

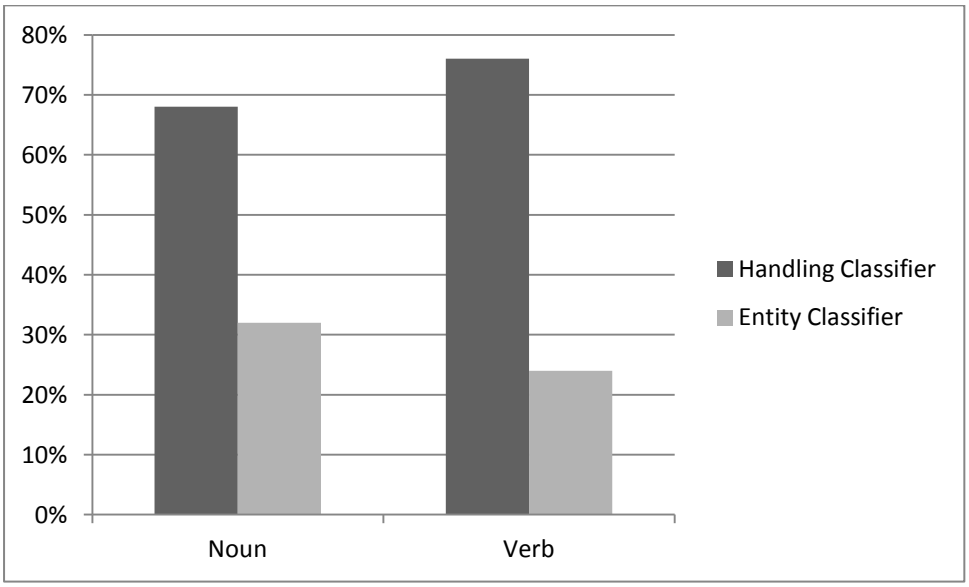


5.2.1.2. Classifier types

In our study, we found out that there are two types of CLs that are embedded in instrumental verbs and nouns. Those CLs are entity CLs and handling (instrumental) CLs. To illustrate, CUT-WITH-SCISSORS is an instrumental verb that hosts the instrument SCISSORS as an entity classifier. On the other hand, GRATE as a verb has an instrument GRATER which is denoted as a handling classifier by the verb.

The occurrences of each type are in different rates, the percentage of handling CLs being higher than the percentage of entity CLs. While we came across over 65% handling CLs in both lexical categories, there were around 30% of entity CLs for each category (see Table 22). It is clearly seen that the percentages for each category are fairly close to each other.

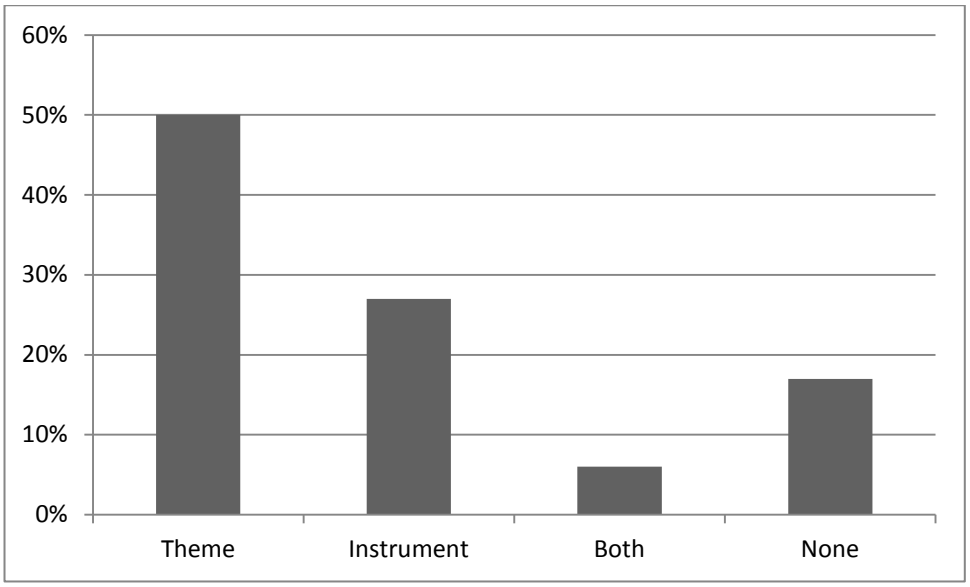
Table 22. Classifier Types in insN/V Pairs in Percentages



5.2.2. Mouthing of the arguments

The majority of nouns are said to be mouthed compared to verbs where the majority is not mouthed (Voghel, 2005; Kimmelman, 2009; Johnston, 2001 among others). However, when verbs are mouthed, mouthing can represent (1) the term for the action or (2) the term for one of its arguments. In this study, we found that these arguments are either theme arguments of the verb (50%) and/or the instrument argument of the verb (27%) or both (6%).

Table 23. Mouthing of the Arguments of Instrumental Verbs



For example, INSPECT-WITH-A-MAGNIFIER is an instrumental verb which can have both its theme and instrument argument mouthed while being signed. CUT-A-BREAD-WITH-A-KNIFE is a sign where the theme bread is mouthed while the action is being signed. UNSCREW-A-NAIL is a verb in which the informants mouthed the instrument rather than the action or the theme.

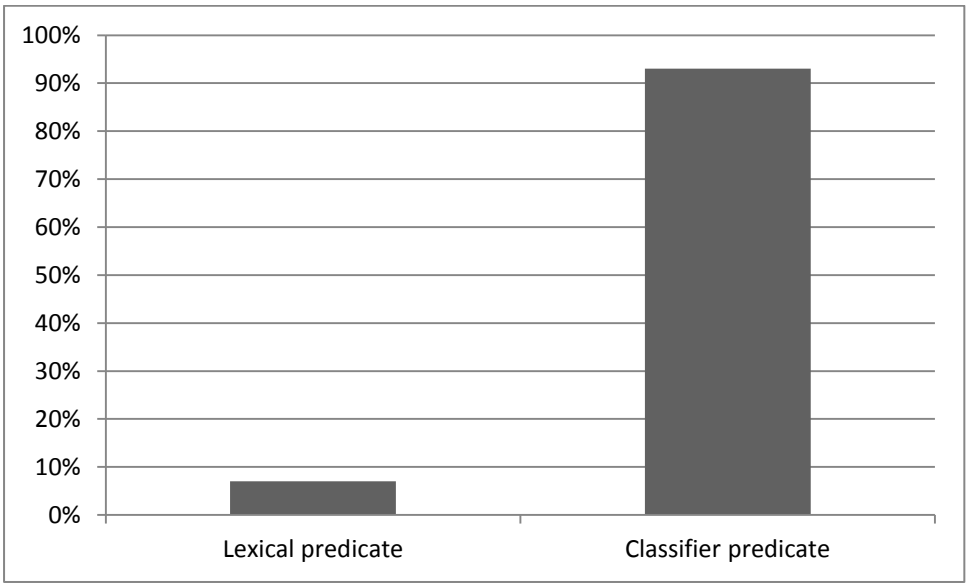
Some items have mouthing as a phonological component of the sign as in examples STIR-WITH-A-MIXER and DRY-HAIR (see Figure 19). In those items, since the mouth is already busy, there is no verb or argument being mouthed. In other words, one part of the sign is nonmanual which is on the mouth. It is also the case for nouns, if the noun has mouthing internally, the Turkish name of the noun is not observed to be mouthed.

Figure 19. (a) STIR-WITH-A-MIXER and (b) DRY-HAIR: mouthing as a phonological component

5.2.3. Predicate Types

Predicates are divided into two groups according to their complexity by Özyürek and Perniss (2011) as lexical predicates and classifier predicates as we mentioned in 2.2.4.2. Firstly, we analyzed instrumental verbs and categorized them according to their predicate type. Then, we distinguished lexical predicates from classifier predicates. We found out that there are 111 classifier predicates out of 120 tokens; only 9 of them are lexical predicates. When presented in percentages, the proportion is 93% to 7% (see Table 24).

Table 24. Predicate Types Found in Instrumental Verbs

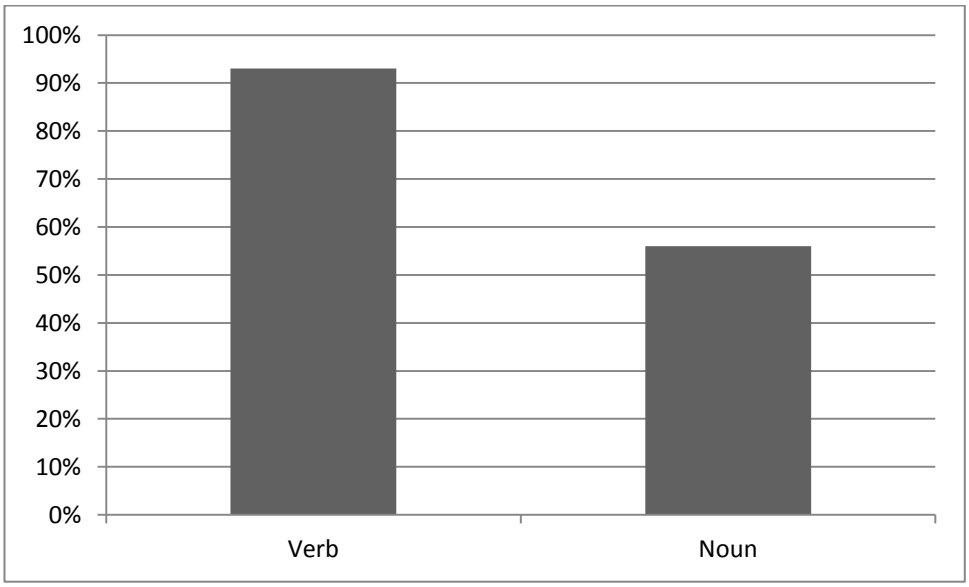


For example, DRINK-WITH-A-STRAW was signed by 2 informants as a lexical predicate while it was signed by 2 others as a classifier predicate.

5.2.4. Iconicity

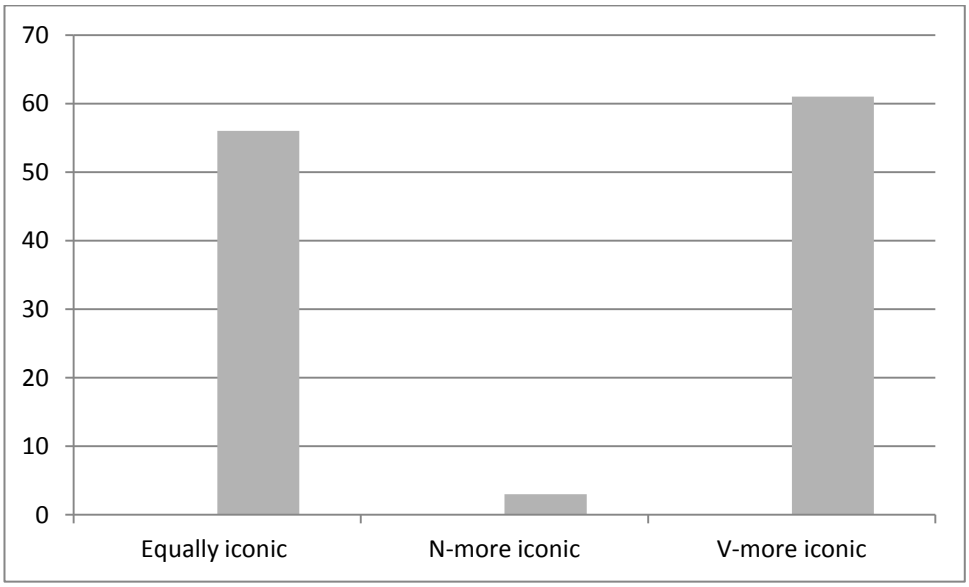
We analyzed and compared N/V pairs in terms of their iconic use of contact, palm orientation, and location. Verbs are more iconic than nouns according to what we obtained from our data (see Table 25). Verbs are more iconic by 93% whereas nouns are relatively less iconic by 56%. For example, noun COMB is articulated in a more neutral space without contact whereas verb COMB is signed on the top of the head with a body contact even though their palm orientations are the same. That indicates that verb form COMB is more iconic than the noun counterpart regarding the use of contact and location.

Table 25. Overall Differences among insN/V Pairs regarding Iconicity



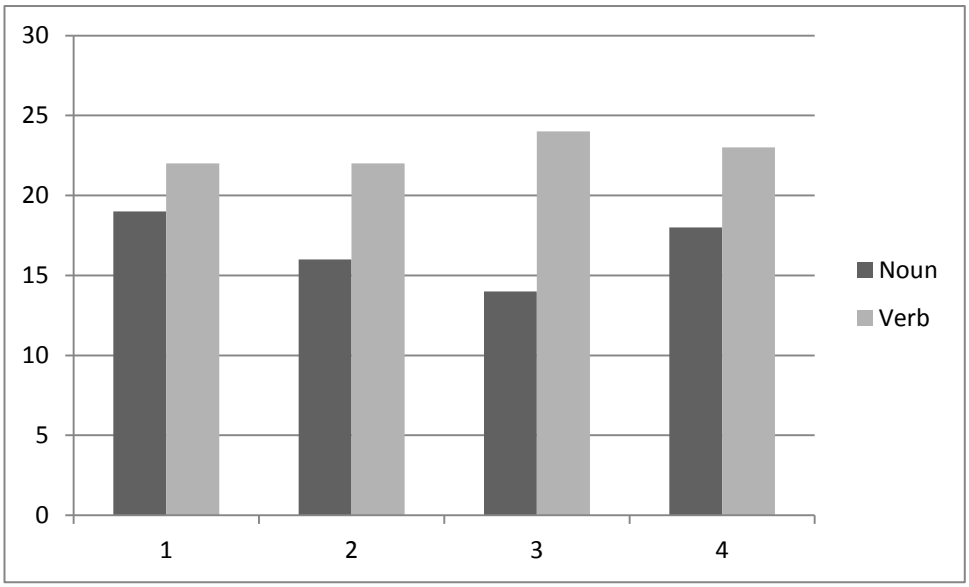
There are cases where instrumental verbs and nouns denoting instruments are (i) equally iconic, (ii) verb being more iconic, and (iii) noun being more iconic.

Table 26. Differences within insN/V Pairs



Some individual differences are observed for this criterion though they do not create big differences in the overall outcomes. All the four informants produced more iconic verbs than nouns (see Table 27).

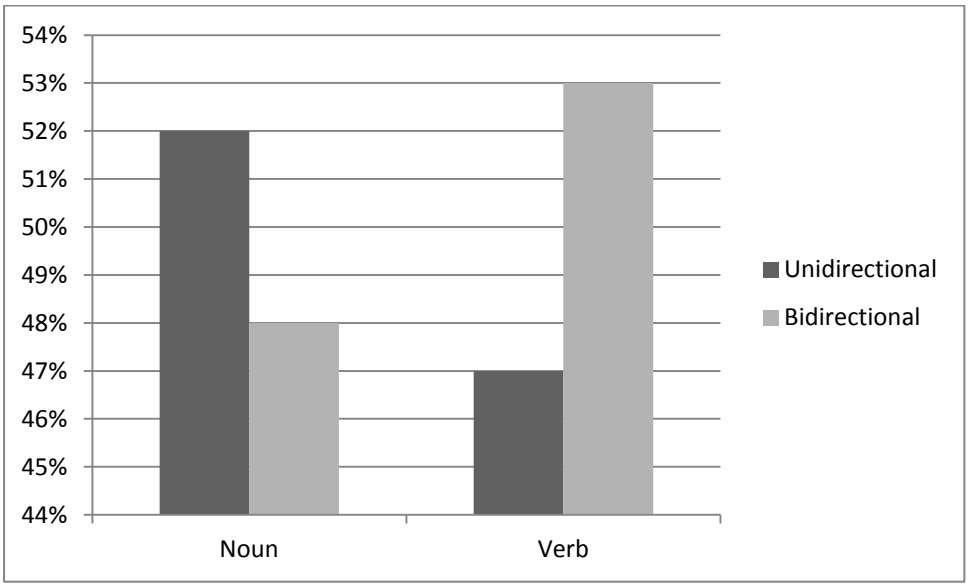
Table 27. Individual Differences in Displaying Iconicity in insN/V Pairs



5.2.5. Use of Space

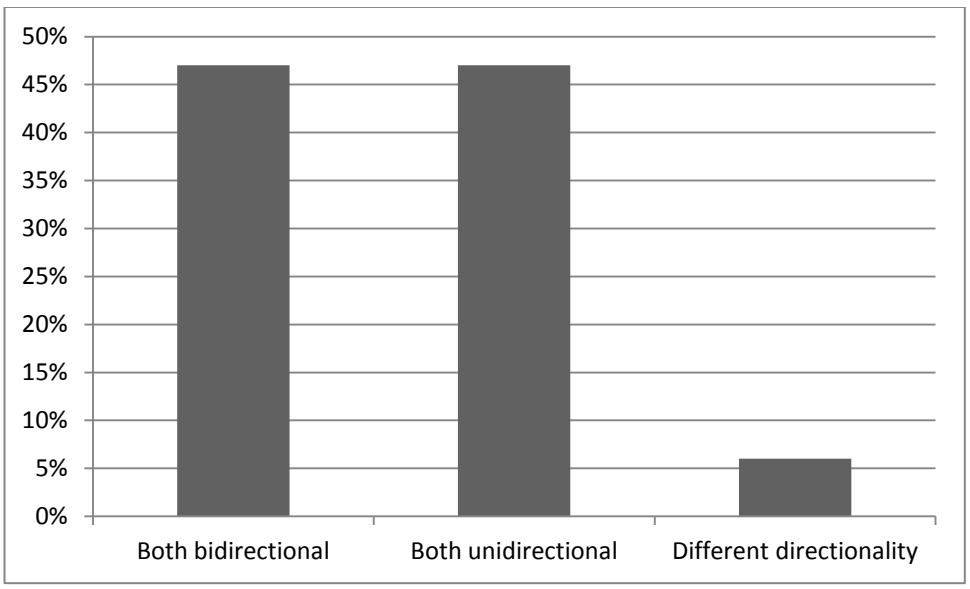
Nouns and verbs were compared in terms of how they make use of space. One dimension is directionality. We observed that there were no major differences in the directionality of these pairs (see Table 28). The second dimension is the location of the signs. Again, we did not come across any major differences with respect to the locations of the noun and verb forms. To clarify, use of space does not distinguish nouns from verbs in TİD. For instance, space used in signing SCISSORS vs. CUT-WITH-SCISSORS is the same.

Table 28. A Comparison of insN/V Items regarding Directionality



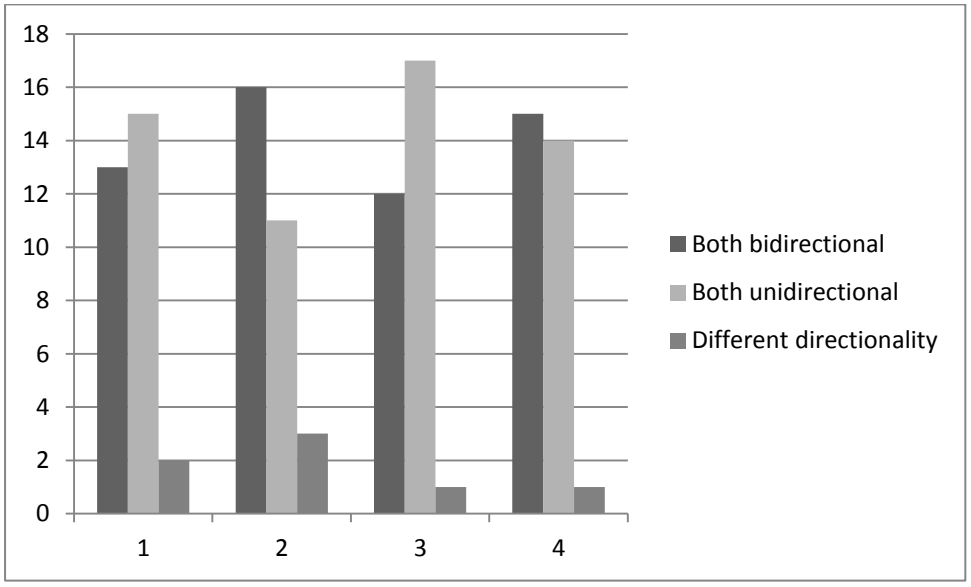
Instrumental verbs and their corresponding nouns might show three different characteristics with respect to their directionality (see Table 29). Both members could be both bidirectional or unidirectional. In the third option, nouns and verbs might have different patterns in their directionality. The number of the first two groups are quite close. Among 120 pairs, 7 of them are different in terms of directionality.

Table 29. The Differences between the Members of Each Pair



There are some individual differences among informants as to the directionality of insN/V pairs as shown in Table 30.

Table 30. Individual Differences in terms of Use of Space in insN/V Pairs



5.2.6. Definiteness

Lastly, we observed something that we did not expect in our study. This is how definiteness is reflected in nouns and verbs. Nouns show traces of definiteness while verbs do not. We noticed that the subsequent signings of a noun were repeated fewer times. In other words, the fact that an object has been introduced before makes the following signings shorter in time and less repeated. We initially targeted the first elicited responses for this study; we found that characteristic of nouns regarding definiteness by coincidence. Therefore, a more systematic analysis of the contribution of definiteness to N/V distinction of TİD is needed.

5.3. A summary of the results of the study

The results we presented beginning from Section 5.1 have revealed that three criteria might play an effective role in insN/V distinction in TİD whereas the other three do not seem to play a role in insN/V distinction. Table 31 gives a clear summary of how these criteria make a distinction for insN/V pairs and the distinct characteristics these pairs display.

Table 31. A Summary of the Results regarding the Six Criteria We Used in Distinguishing Instrumental Verbs From Nouns Denoting Instruments

		Noun	Verb	Does it mark a distinction?
Repetition	Single	22%	20%	No
	Repeated	78%	80%	
Length	Short	50%	17%	Yes
	Long	28%	61%	
Mouthing		66%	22%	Yes
Use of Classifiers	Presence	92%	77%	No
	Type	68%	76%	
Iconicity		56%	93%	Yes
Use of Space	Unidirectional	52%	47%	No
	Bidirectional	48%	53%	

In this chapter, we displayed the results in numbers, percentages through tables and examples. We mentioned all six features, both phonological and morphological, that we introduced in Chapter 2 and elaborated in Chapter 4. Additionally, we found two

more features that might work in distinguishing instrumental verbs from their corresponding nouns. These two features are fingerspelling and definiteness. In the next chapter, we will analyze our findings and evaluate them in terms of its contributions to both the investigation of TİD in specific and N/V distinction in general.

CHAPTER 6

DISCUSSION

In this chapter, we will discuss the results in terms of sign language phonology, morphology, and semantics of N/V distinction, raise some methodological issues, and discuss the limitations of the study.

6.1. The Efficiency of Phonology in N/V Distinction in TİD

We measured instrumental N/V pairs in TİD in terms of length, repetition and mouthing. In the following subsections, we will discuss each of these separately.

6.1.1. Length Distinction between Nouns and Verbs of TİD

To begin with the length feature, we observed that nouns denoting instruments are shorter whereas verbs denoting actions that involve an instrument are longer in terms of duration. This is similar to the findings from other sign languages listed in 3.2.2.

6.1.2. Does Repetition Not Really Mark a Distinction?

As for the repetition of each lexical category, the number of single movement nouns is almost equal to single movement verbs. In other words, the same number of verbs and nouns are of single movement. However, it is important to point out that some verbs might inherently require repetitive action like CUT-WITH-SCISSORS and some verbs like PHONE might not. In those cases, the pattern of repetitions of nouns and verbs are the same. The noun SCISSORS and the verb CUT-WITH-SCISSORS have repetitive movements whereas the noun PHONE and the verb PHONE consist of single movements. PHONE-PHONE has been found to be the only N/V pair that has single

movement across all four signers among all the N/V pairs. On the other hand the differences between instrumental nouns and verbs in terms of repetition have been captured in such examples as KEY vs. OPEN-WITH-KEY where noun is of a single movement while verb has a repetitive movement, and, LIGHTER vs. LIGHT-WITH-A-LIGHTER where verb is of a single movement across all four signers while noun has a repetitive movement.

In TİD, nouns are shorter but they are almost the same with the verbs in terms of repetition feature. From the results of the previous studies on other sign languages, it could be concluded that nouns are repeated more because they are short in terms of duration. They might tend to be repeated more to be more salient (Hohenberger, personal communication, September 19, 2012). On the other hand, verbs are longer signs with a single movement, which probably make them salient by their nature. Therefore, it might be interesting that N/V pairs in TİD do not differ from each other with regard to their repetition.

The fact that nouns are shorter than verbs in terms of their duration even though there is no difference in terms of repetition in TİD brings about the idea that repetition is not a distinctive feature for N/V pairs in TİD. However, since this research is based on one type of N/V pairing only, it might be misleading to assume that no N/V pairs are distinguishable through repetition in TİD. Natural data is needed to draw better generalizations for instrumental N/V pairs. For all N/V pairs in TİD, a more comprehensive study of those pairs including more semantic categories other than the ones denoting instruments is another path of research.

The contrast of TİD with other sign languages in terms of repetition might have two reasons. The first reason is the simultaneous morphology of the sign languages which enables multiple utterances at a time (Aronoff et. al., 2005; Sandler

& Lillo-Martin, 2006). The reason that verbs and nouns are almost the same in terms of repetition might be due to the aspectual encoding that occurs on the verb. Aspect on the verb might affect not only the length but also the duration of the verb. Durative and iterative aspects (Supalla & Newport, 1978), for example, change the internal structure of the verbal items. It is a drawback for the study of verbs used in context to be analyzed in the form of a root. It is a challenge for almost all N/V studies to elicit verbs and make further analyses on them in comparison with nouns. Kimmelman (2009), in particular, raises the issue of eliciting verbs aspect free but leaves the question unanswered.

There is one last issue regarding the repetition-length relationship. In our data, we observed that some verbs and nouns are equal in terms of repetition but not in length. This means both the verb and the noun either both single or both repetitive although they last for different period of times. To illustrate, both the noun MAGNIFIER and the verb INSPECT-WITH-A-MAGNIFIER were signed with a single movement by Informant 1. Nevertheless, the instrumental verb is 9-frames-long whereas its noun counterpart is 17-frames-long. This shows us that even though this N/V pair has an equal number of repetitions (single repetition), the noun lasts longer than the verb. This example is crucial for understanding the relationship between repetition and length. Being equal in repetition does not guarantee or predict the relative length of N/V pairs. The reverse is also true. Having the same duration does not require sharing the same characteristics in terms of repetition. For instance, the N/V pair SHOEHORN and TO-WEAR-WITH-A-SHOEHORN both last 20 frames. However, the noun has a repetitive movement whereas the verb has a single movement. To summarize, these two parameters, length and repetition, might show different tendencies though they seem to be interrelated.

6.1.3. Mouthing as the Most Prominent Criteria

We noticed that mouthing accompanies nouns more than verbs in TİD. Even though the other nine sign languages that have been studied in this respect display a pattern where nouns are mostly short and repeated, TİD follows a different pattern from them.

Johnston (2001), Voghel (2005) and Kimmelman (2009) argued that mouthing accompanies nouns more than verbs for Auslan, QSL and RSL. The results of our study show that TİD is similar to other languages regarding the mouthing of lexical items that belong to different categories. This means mouthing might be a distinctive feature for grammatical categories for TİD as it was suggested for other sign languages above. The fact that the data collected in different ways in different sign languages strengthens the argument that mouthing accompanies nouns more than verbs. To illustrate, the data are gathered through both isolated signs and natural production in Auslan. Results for QSL were obtained from natural discourse. The data for TİD and RSL have been elicited in experiment settings. This suggests that no matter how the data were collected, mouthing has occurred mostly with nouns cross-linguistically. However, more studies on various sign languages are needed to contribute to this argument. Additionally, data from TİD collected in different ways would also be another way to make the proposition stronger. Then, the next question might be "What might happen to signs in natural discourse in TİD? Does mouthing still make a difference?" This is not a question that we can answer yet because we do not know whether the items that we have collected are in the same forms as the forms they would have been in if they had been used in context. We leave this question for future research in which the data are obtained from natural discourse.

6.1.4. Fingerspelling as a Potential Distinctive Criterion

Fingerspelling is the last part of the discussion on the analysis of phonological aspects of our data. As we stated in Section 4.2.4, we took into consideration only the first utterance of the signers and built our analysis on that. However, it is worth mentioning that signers did use fingerspelling from time to time, particularly when the addressee did not get the sign at the first two trials. Signers turned to fingerspelling as a last resort after they signed the target item for the third or fourth time. In sum, there were a total of five fingerspellings and all of them were used for fingerspelling the nouns. None of the verbs were fingerspelled. Nevertheless, this number is far from enabling us to make general assumptions on the effect of fingerspelling in N/V distinction in TİD. Rather, the result presents a new point of view as to the lexical categorization in sign languages and how lexical categorization is represented by different means. If we had more participants or had studied many groups of N/V pairs at the same time, we might have come up with more comprehensive results.

6.1.5. Do Phonological Criteria Work?

Phonological criteria, specifically repetition, do not yield systematic results as stated for some sign languages (Voghel, 2005; Schreurs, 2006; Kimmelman, 2009 among others). Another thought would be that TİD might be using some other phonological features to mark the N/V distinction. Among these features are iconicity, as proposed by Kimmelman (2009), and fingerspelling.

6.2. The Assessment on Morphological Criteria

6.2.1 Employment of Classifiers

The use of CLs is an important part of this study. The primary analysis on CLs is on the presence of classifier constructions. We found that CLs are commonly hosted by instrumental verbs. In other words, instrumental verbs in TİD are classifier predicates more than lexical predicates. 93% of the verbal predicates employ classifier constructions whereas only 7% of the verbal predicates are lexical predicates.

The high ratio of classifier predicates might be due to the type of semantic group of lexical items chosen for this study, namely instruments. If random N/V pairs had been investigated, it might have been the case that the percentage of lexical predicates is higher. We claim that the high number of occurrence of classifier predicates resuls from the nature of the data. The main question to be raised is whether the employment of CLs helps distinguish between nouns and verbs. When the percentage of classifier nouns was analyzed, it turned out to be the case that instrumental nouns employ more CLs than instrumental verbs. The results in percentages shows that nouns are accompanied with classifier constructions 72%, and bare lexical items constitute the 28% of the data. We concluded that instrumental verbs do make use of CLs more than their noun counterparts. This is mostly because in instrumental verbs there are usually two arguments, one is being the theme and one is being the instrument (see Section 2.2.5). The instrumental verb can either choose between one of these to employ as a classifier, or both. To illustrate, the instrumental verb HAMMER-A-NAIL where the theme is a nail, both the instrument hammer and the theme nail could be signed as a classifier in the verb lexeme. However, an instrumental noun has only the instrument to be signed as a classifier,

only the instrument itself. For example, HAMMER is the only candidate to be signed as a classifier in the noun lexeme (see Figure 20).

Figure 20. The signing of HAMMER vs. HAMMER-A-NAIL

This classifier in nouns and verbs could either be a handling or an entity type classifier both in nouns and verbs. So far, we have not made any differentiation about the type of classifier. Rather, we focus on the presence of the classifier construction and claim that verbs can employ CLs more than nouns can.[4]

The secondary analysis of CLs in instrumental N/V pairs in TİD relies on the types of CLs that occur with nouns and verbs. To begin with the verbs, the classifier type that is common in instrumental verbs is the handling classifier. Entity CLs are rare, SASS CLs are not observed. To exemplify, the verb COMB in TİD is articulated by using a handling classifier which is a covered T handshape  (Kubuş, 2008). As for the noun group, handling CLs outnumber entity CLs in instrumental nouns. Again, no SASS CLs were observed in nouns. The argument that a verb employs an

[4] We mean classifer handshapes while mentioning classifiers employed by nouns. We are aware of the fact that classifiers have been analyzed as one type of predicate, either verbal or nominal in the literature. When researchers say predicate classifier, they take it as a syntactic component. Here, we see it as a morphological component, and therefore, analyze them as handshapes that contributes to meaning of nouns and verbs.

handling classifier whereas the corresponding noun might prefer to employ an entity classifier (Engberg-Pedersen, 1993; Kimmelman, 2009) could also be valid for TİD to some extent. We observed more entity CLs in nouns than verbs. While 24% of the CLs in verbs are entity type, 32% of them in nouns are entity CLs. The rest of the N/V pairs with CLs have handling CLs. However, this percentage is not sufficent to propose that classifier type makes a distinction in lexical categorization. To be able to draw more concise conclusions about this aspect of CLs, more N/V pairs need to be analyzed other than instrumental pairs.

It was expected that the classifier type is mostly of the handling type since the focus of our study is on instrumental N/V pairs. With another group of N/V pairs, the results could dramatically change and there would be more lexical predicates and more types of classifiers in classifier predicates.

Furthermore, the fact that handling CLs outnumber entity CLs both in nouns and verbs indicate that TİD is among the sign languages which prefer handling CLs over entity CLs in terms of sign language typology by (Aronoff et. al 2011, Cagliari).

6.2.2. Iconicity in TİD

Kimmelman (2009) suggests that nouns are more economical and verbs are more iconic in RSL and this is the reason why there are formal differences between them. We agree with his proposal on the grounds that verbs in TİD are more iconic as well. As for iconicity, we observed that instrumental verbs employ classifier constructions more than their noun counterparts. In other words, nouns might be frozen lexical items more than being a part of classifier constructions. The reason is because nouns prefer entity CLs whereas verbs prefer handling CLs as stated in Kimmelman (2009). However, since we focused on only one semantic category and looked into related

N/V pairs in that category, we did not come across such selection of classifier types by either verbs or nouns. Still, this classifier selection could be applicable to a wider range of N/V pairs in TİD. Coming back to iconicity, verbs are more iconic in TİD, and therefore, they select classifier constructions more than being realized as lexical entries.

The fact that verbs are more iconic than nouns whereas nouns are accompanied with more mouthing and fingerspelling raises the question as to whether there is a negative correlation among those criteria. In other words, the more iconic a part of speech is, the less need for mouthing and fingerspelling there is. For our case, this part of speech is the verb. Since nouns are less iconic there might be more need for mouthings or fingerspellings. Our findings support the hypothesis by Kimmelman (2009) about the iconicity of verbs and economy of nouns which argues "the more economic articulation of nouns makes them *less perceptually salient*. Mouthing can therefore be considered a supportive system which obviously facilitates the interpretation of a sign" (p.181).That means since nouns are more economic, they need a mechanism or mechanisms that make them more salient. That could be an explanation for why mouthing and fingerspelling in TİD were observed more with nouns than with verbs.

6.2.3. Is Definiteness a Distinctive Feature?

The data we gathered showed that nouns become shortened in cases where they are articulated more than once. The fact that the same phenomenon does not occur with verbs raises the question of whether definiteness is a potential means to differentiate

between parts of speech in sign languages. However, this issue requires closer inspection and a well-thought methodology regarding the elicitation of definiteness.

6.2.4. The Implications of Verb Classifications for TİD

The verb classification by Padden (1988) that groups verbs as plain, spatial and agreement (see Section 2.2.2.) does not have any implications for the N/V categorization in TİD. Instrumental verbs fit in the category of plain verbs in this classification. We did not have any spatial or agreement verbs in our study. Therefore, we have not been able to observe any contribution of this classification to N/V distinction. In fact, there are some examples of agreement verbs like PHONE in our list which is originally an agreement verb in TİD. It realizes as PHONE-SOMEBODY in natural speech. However, we did not observe any traces of agreement in our study despite having such types of verbs.

However, our study is more directly related to the classification by Engberg-Pederson (1993). Following her, instrumental verbs in our study are either plain verbs or verbs of handling under the category of complex verbs. Since the latter classification is morphology oriented, it fits better into the analysis of the verbs in this study. Even though verbal classification sheds a light on the verb types in TİD regarding morphology and gave a better understanding of verbs in our study, it does not provide an explanation for any kind of N/V distinction in TİD.

6.2.5. The Starting Point for Lexical Categorization

The semantics of the N/V pairs have not been investigated in our study as a separate part in previous sections. However, we clarified that our starting point was semantic criteria, according to which nouns denote entities and persons whereas verbs denote actions and states (see Section 4). While designing our stimuli, we first grouped entities to elicit nouns and actions to elicit verbs. Then, we categorized the elicited items as nouns or verbs accordingly. Later, we developed the linguistic analyses on that distinction. Yet, this methodology might be circular where a researcher starts defining the lexical category by semantic criteria, and examines phonological and morphosyntactic criteria accordingly. Later, s/he describes semantic criteria based on phonological and morphological criteria. Defining one rule (N/V distinction for this case) based on other one without having a deeper analysis on those categories is problematic. Indeed, we need to find the motivation behind why and how these categories happen to exist. Additionally, one adverse effect comes from the linguistic knowledge on spoken languages where the N/V distinction is assumed to be universal despite the ways are language specific. Sign languages might have different means for distinguishing between their lexical categories if they have any.

6.2.6. On the Universality of Parts of Speech: Where does TİD stand?

It is mainly argued that there are phonological, morphological and syntactic criteria that determine parts of speech in languages. However, these criteria can be applied to particular languages; there are no rules that are valid for all languages as mentioned Section 3.1 (Haspelmath, 2001). Despite belonging not only to a different modality but also being a different language, TİD might be better analyzed by using

morphosyntactic criteria to distinguish between parts of speech, as well. But, there are further suggestions as to what else can contribute to the lexical categorization in sign languages such as iconicity (Kimmelman, 2009; Meir, 2012) and use of space (Schwager & Zeshan, 2008) (see section 2.2.2).

A cross-linguistic categorization of lexical items is more plausible on a semantic basis (Haspelmath, 2001; Meir, 2012) (see Section 3.2). It is widely accepted that nouns correspond to entities and persons whereas verbs correspond to actions and states as we discussed in Chapter 3. Based on this view, this study aimed to elicit verbs through action videos and nouns through object pictures. There are two points that support this view. First of all, we chose a semantic category which is instrument denoting N/V pairs. We thought that there might be a certain pattern among expressing instruments as entities, actions performed with these instruments and the relationship between them. Secondly, we collected our data assuming that we could elicit nouns using entities and verbs by using actions. That is why we used pictures to elicit nouns and action videos to elicit verbs.

In the end, we found that there are distinct lexical categories such as nouns and verbs in the light of the examination of the insN/V pairs. We suggest that this distinction present in the insN/V pairs could indicate that there is also a distinction in all formally and/or semantically related N/V pairs in TİD regardless of their semantic category.

6.2.7. The Reliability of Parameters

Based on the results that we obtained, we argue that semantically and formally related verbs and nouns might have a common hand configuration in the lexicon and their realization in syntax might define the lexical category of signs following the seminal work by Johnston and Schembri (1999). In other words, there might be no derivational process between the two classes, both forms might have been derived from underspecified underlying forms as Supalla and Newport (1978) suggested. According to them, the features like repetition and length are the features that are determined during derivation.

Some linguistic models argue that the differences created between noun and verbs during derivation are mostly context dependent, and according to them, there are only functional distinctions between nouns and verbs as we mentioned in section 3.2. Following this idea, some researchers assert that phonological distinctions are liable to disappear when an item is uttered/signed in context (Johnston 2001, Bouchard 2003). Additionally, they suggest that examining morpho-syntactic criteria such as use of space, possession and negation would be more reliable. This suggestion implies that starting out with phonological characteristics of verbs and nouns only is not sufficient enough to draw general conclusions about the distinction of sign classes. So, further studies that look into possession and negation and syntactic characteristics of N/V pairs in TİD are needed. These will give a better understanding of the phenomenon that we observed in the language.

All in all, phonological criteria that define nouns and verbs in a sign language might disappear in some contexts. We do not know whether this argument is true for TİD. Naturally occurring data is needed to support this claim.

6.3. Methodological Issues

The majority of the researchers on the differentiation of parts of speech in sign languages agree that phonological criteria are not sufficient on their own. It is not only individual differences among signers that affect the repetition, length and mouthing of the target items, it is also the inflectional of derivational processes that shape the phonological outcomes to a certain degree. For instance, the repetition of a lexical item is hard to elicit and it depends on other processes. Kubuş (2008) asserted that reduplication is a strategy to maintain plurality of nouns in TİD. Thus, it would be significant to test repetition of nouns through pluralization. Furthermore, Gökgöz (2009) mentions aspectual patterns on verbs in TİD where repetition also plays a role. Both inflectional processes are likely to influence the repetition in lexical items. Therefore, even though we might have elicited the nouns without the plurality effects, it is hard to elicit verb forms without any aspectual modification.

6.4. Limitations

We have classified the limitations of this study into two groups. The first group contains the ones that might affect the phonological variables in general; the second group contains the ones that might affect the morphological analysis of N/V pairs. There are four factors that might have influenced the results of the phonological analysis. These are (i) unnatural setting, (ii) limited set of data, (iii) the interlocutor effect during the collection procedure of the data and (iv) the surrounding spoken language effect.

6.4.1. Unnatural Setting

Unnatural setting refers to the experiment designed for the elicitation of target data. Our data collection method was not a natural conversation and that might have led to the unusual sign production of native signers.

6.4.2. Limited Set of Data

The results were drawn from a limited set of data. A larger sample might yield different outcomes. For instance, the repetition of N/V pairs might be different from each other like in other sign languages when looked into a larger corpus.

6.4.3. The Interlocutor Effect

Since the informants signed to a bilingual person, they might have accommodated their expressions for her to understand more clearly so that she would be able to forward the message to a non-signer correctly. This accommodation of signing is a common behavior of deaf in the presence of hearing people (Turner, 2004). Therefore, to collect data with native signers only might give more reliable results.

6.4.4. The Surrounding Spoken Language Effect

The last category of shortcomings is the surrounding spoken language effect. This is a factor that might affect mainly mouthing. Mouthing has a different status from other phonological criteria because there is another language involved, Turkish in this case. Therefore, we find it necessary to analyze the factors that might affect mouthing specifically. There are three of these: (i) signer's knowledge of the spoken language, (ii) familiarity of the words to the signer, and (iii) signs that have mouthing as a phonological component.

To begin with the spoken language knowledge, some native signers might have been exposed to written Turkish more than others. Their education level is the only criterion that is available to us to figure out these signers' knowledge of written Turkish. The reason why we raised this issue is that the participant who had graduated from high school has a high percentage of mouthing accompanied with nominal signs than the primary school graduate.

Secondly, the familiarity of the words to the native signers might affect the percentage of mouthing. For instance, TELEPHONE is a common sign which is used in daily life, and it is mouthed by all three signers, whereas STAPLER which is not a common word as TELEPHONE is not mouthed at all. The reason might be that the signers do not know the word for STAPLER in Turkish.

Lastly, there are some words that already have mouthing as a phonological component of the sign itself. They are also called "expressive mouth signs" (Voghel, 2005, p70). MIXER sets a very good example as an expressive mouth sign with puffed cheeks. The presence of mouthing as an internal part of the sign for 'mixer' leaves no space for the signer to mouth the word in Turkish. Hence, neither the verb nor the noun has a chance to be distinguished by mouthing if the mouth is already active lexically.

6.4.5. Elicitation of Verbs without Aspectual Modification

The second group of limitations has been observed in the morphological analysis. The first one results from the elicitation of the verbs. Since it is difficult to elicit verb roots without any aspectual modification, the phonological criteria could be affected, thus, cause problems in the comparison of verbs with nouns. In other words, we had to compare nouns to verbal predicates somehow. On the other hand, the nouns might

not be in their bare form when they are signed in isolation, either. They might be predicates. Therefore, data could be enriched with natural data and even with translated signs from Turkish.

6.4.6. The Presence of Complex Verbs

Another problem is the complexity of signs elicited from informants. Whereas the target sign is HAMMER-A-NAIL, the informants sign two verbs at the same time: (i) to nail with a hammer and (ii) hold the nail. This is also the case for several other target verbs, for instance, to open with a bottle opener and hold the bottle at the same time. In those cases, we took into consideration the target form and ignored the other verb signed simultaneously in this study.

CHAPTER 7

CONCLUSION

In this study, we investigated whether there is a distinction in instrumental N/V pairs in TİD, through phonological and morphological criteria. We looked into length, repetition and mouthing as the phonological criteria for insN/V distinction. Furthermore, we investigated classifier types, iconicity and use of space as morphological elements and discussed their contribution to insN/V distinction.

We observed how nouns denoting instruments differ from instrumental verbs in terms of six criteria and presented the results in numbers and/or in percentages. We concluded that mouthing and iconicity are the two prominent criteria to distinguish nouns from instrumental verbs in TİD among these six criteria. Our findings are:

- Verbs are longer than nouns regarding length.
- There is no distinction observed in terms of repetition.
- Mouthings accompany nouns more than verbs.
- Nouns are followed by fingerspelling, but verbs are not.
- Verbs are more iconic than nouns.
- Verbs and nouns employ same types of classifiers in instrumental pairs.
- Nouns are not different from verbs with regard to their use of space.
- Nouns show traces of definiteness.

The discussion we conducted centered on the effect of these criteria on the presence of lexical categories (mainly nouns and verbs) in TİD and universality of these categories with respect to examples from TİD. We also tried to figure out the

most suitable approach to lexical categorization for TİD according to its specific characteristics based on the instrumental noun verb pairs.

This thesis gives an introductory look into the presence of N/V classes in TİD and their distinction. We found that TİD make uses of phonological and morphological parameters to distinguish its nouns from its verbs like in many other languages through the investigation of instrumental pairs. On the other hand, as Haspelmath points out "…it is not possible to define crosslinguistically applicable notions of noun, adjective, and verb on the basis of semantic and/or formal criteria alone" (p.16544). It is probable that the problem gets more complicated if there are languages of a different modality, sign languages. There is still the possibility that lexical categorization in sign languages might need a different organization since sign languages are different from spoken languages in many ways, particularly in their modality. Since the mode of sign languages is visual-spatial unlike spoken languages, the realization of word classes is likely to be unique to sign languages, as well. This can be achieved through more work both in TİD and in other understudied languages on the subject.

Finally, we discuss ways in which further research could be conducted. One dimension would be to conduct a research on another semantic category other than instruments such as movements that involve the human body or a formal category such as reversible verbs as in Auslan (Johnston, 2001). The noun and verb forms might be analyzed and evaluated in similar ways to have a better picture of the N/V distinction in TİD and its cross-linguistic implications. Secondly, instrumental verbs and nouns extracted from natural conversations of TİD signers might be compared to the findings of this study to be able to make a more reliable generalization because signs might display different phonological and morphological patterns when they are

in isolation or in context. Lastly, syntactic analyses of these instrumental verbs and their corresponding nouns in context might strengthen this research from another aspect. This is important because it would yield parallel findings with what we have found for phonological characteristics and it would strengthen our research or it might not support some of the findings above and open the way to further research.

APPENDIX A

Target items

Instrumental verbs	Corresponding nouns
To hit with a stick	Stick
To brush teeth	Toothbrush
To stir with a mixer	Mixer
To open with a key	Key
To talk on the phone	Phone
To unscrew	Screwdriver
To grate	Grater
To comb	Comb
To dry hair	Hair-dryer
To cut with scissors	Scissors
To open with a bottle opener	Bottle opener
To drink with a straw	Straw
To scratch with a coin	Coin
To inspect with a magnifier	Magnifier
To clean with a cloth	Cloth
To eat with a fork	Fork
To sharpen a pencil	Pencil-sharpener
To light with a lighter	Lighter
To paint with a brush	Painting brush
To clip nails	Nail clipper
To shoot with a camera	Camera
To staple	Stapler
To write with a pen	Pen
To hit with a hammer	Hammer
To file nails	Nail-filer
To put on with a shoehorn	Shoehorn
To sew with a needle	Needle
To clean with a sweeper	Sweeper
To cut with a knife	Knife
To iron	Iron

Fillers

Verbs	**Nouns**
To listen to music	Earphone
To spill water	Glass
To sleep	Apple
To drink water	Lamp
To watch TV	Computer
To eat cookies	Biscuit
To drink tea	Cup
To wash hands	Liquid soap
To scrab hand cream	Vase
To read book	Book

APPENDIX B

Pictures

1. Stick

2. Toothbrush

3. Mixer

4. Key

5. Phone

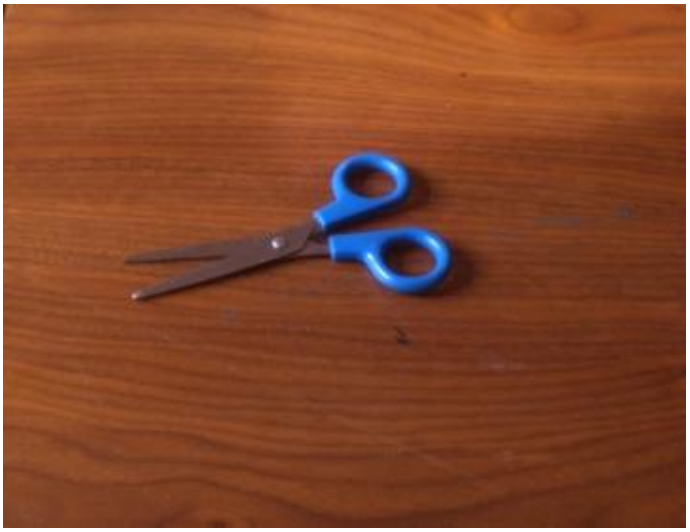
6. Screwdriver

7. Grater

8. Comb

9. Hair-dryer

10. Scissors



11. Bottle-opener

12. Straw

13. Coin

14. Magnifier

15. Cloth

16. Fork

17. Pencil-sharpener

18. Lighter

19. Painting brush

20. Nail-clipper

21. Camera

22. Stapler

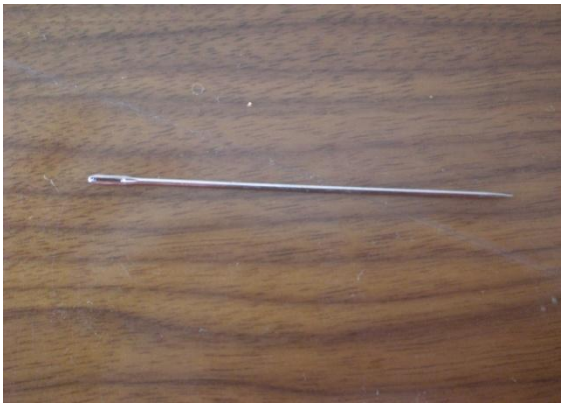
23. Pen

24. Hammer

25. Nail filer

26. Shoehorn

27. Needle



28. Sweeper

29. Knife

30. Iron

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