



**T.C.**

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**THE ROLE OF COGNITION AND CULTURE IN THE PRODUCTION AND  
INTERPRETATION OF L2 ENGLISH NOMINAL COMPOUNDS**

**BY**

**HANDE ÖZDEMİR**

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**YEDİTEPE UNIVERSITY  
GRADUATE SCHOOL OF EDUCATIONAL SCIENCES DIRECTORATE**

**THESIS SUBMISSION and APPROVAL FORM**

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APPROVAL:

Dr. Öğr. Üyesi Aysun KUNDURACI  
(Advisor)

\_\_\_\_\_  
(Signature)

Dr. Öğr. Üyesi Bünser Dilara KOÇBAŞ DEMİR  
(Member)

\_\_\_\_\_  
(Signature)

Doç. Dr. Emrah GÖRGÜLÜ  
(Member)

\_\_\_\_\_  
(Signature)

SUBMITTED BY : Hande ÖZDEMİR  
DATE OF THESIS DEFENSE : 19.01.2021  
DATE OF THESIS APPROVAL : 19.01.2021

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## LIST OF ABBREVIATIONS

CL: Cognitive Linguistics

CM: Compound Marker

ELT: English Language Teaching

GEN: Genitive Suffix

GJ: Grammaticality Judgement

L1: First Language/ mother tongue

L2: Second language

NNC: Noun-Noun Compound

ofNP: Noun Phrases with embedded prepositional phrases headed by of

PET: Picture Elicitation Task

POSS: Possessive Suffix

PossP: Possessive Phrase

PP: Prepositional Phrase

SLA: Second Language Acquisition

## ÖZET

### BİLİŞ VE KÜLTÜRÜN, İKİNCİ DİL İNGİLİZCE AD BİLEŞİKLERİNİN ÜRETİMİ VE ANLAMLANDIRILMASINDAKİ ETKİSİ

Bu çalışma, ikinci dil olarak İngilizce ad bileşiklerinin üretimini ve anlamlandırılmasını etkileyen faktörleri araştırmaktadır. Çalışma, anadilin biçimsel tipolojisinin (adsıl bileşik yapısıyla sınırlı) yabancı dil olarak İngilizce ad bileşiklerinin üretiminde form bazındaki etkisine (Lardiere, 1995) ek olarak iki faktör daha önermektedir: gerçek dünya bilgisi ve kültür. Anlamlandırma sürecine bilişsel dilsel bir bakış açısıyla yaklaşmaktadır. Çalışma, yabancı dil öğrencilerinin anlamlandırma sürecini şematik bir görüş ile analiz ederek (Langacker, 1987), yabancı dil öğrencilerinin ikinci dil olarak İngilizce ad bileşiklerini anlamlandırmasının bilişsel şemalar (çalışmada ele alınan ismiyle *gerçek dünya bilgisi*) tarafından etkilendiğini savunmaktadır. Başka bir ifadeyle, gerçek dünya bilgisi şematik bir açıdan incelenerek bilişsel şemaların bir parçası olarak ele alınır. Ayrıca çalışma, öğrencilerin gerçek dünya bilgisine ek olarak, ikinci dil olarak İngilizce ad bileşiklerinin öğrenme sürecini, özellikle de anlamlandırma sürecini, etkileyen üçüncü bir faktör olarak *kültürü* (kültürel şemalar) önermektedir.

Çalışma, önerilen faktörlerin etkisini belirlemek için, belirli sayıda katılımcıya (araştırmacı tarafından geliştirilen) resimli tanımlama testi (picture elicitation task), dilbilgisi muhakeme testi (grammaticality judgement test) ve bir de yorumlama testi (interpretation task) uygulanmıştır. Katılımcılar Türk (40), İtalyan (40) ve İngiliz (10) olmak üzere üç gruptan oluşmaktadır. Yabancı dil öğrencisi olarak Türk ve İtalyan katılımcılar orta düzeyde İngilizce yeterliliğine sahiptir.

Sonuçlar hem nitel hem de nicel yöntemler kullanılarak analiz edilmiştir (Bağımsız t-testi, içerik analizi). Çalışmanın önemli bulguları şu şekildedir: (i) L1 adsıl bileşik yapısı,

ikinci dil olarak İngilizce ad bileşiklerinin biçimsel üretiminde etkilidir. (ii) İkinci dildeki hedef yapıların bilgisi de biçim açısından önemli bir faktördür. (iii) Gerçek dünya bilgisi (ve ilgili bilişsel şemalar) ve kültürel şemalar, özgün ad bileşiklerinin (*novel compounds*) anlamlandırılmasında önemli bir faktördür ve belirli bir kültürel şemanın varlığında, kültürel şema, şema aktivasyon sürecinde kavramın belirginliğini artırarak gerçek dünya bilgisine ağır basmaktadır. (iv) Şemaların bağlam bağımlılığı göz önüne alındığında, farklı toplulukların yabancı dil konuşucuları/öğrenenleri gerçek dünya bilgisi (şemaları) ve dolayısıyla da öğrenme süreci açısından birbirlerinden farklıdırlar. Yabancı dil öğrenenlerinin bilişsel bir bakış açısıyla ele alınan kültürü hakkındaki yeni bulgular yabancı dil öğretimi için önemli çıkarımları ortaya koymaktadır ve bu durum da yabancı dil öğretiminde, yabancı dil öğrenenlerin yerli kültürünü dikkate almak gerektiğini ortaya çıkarmaktadır.

*Anahtar Kelimeler:* İkinci dil olarak İngilizce, ad bileşikleri, gerçek dünya bilgisi, kültürel şemalar, Bilişsel Dilbilim, İkinci Dil Edinimi

## ABSTRACT

### THE ROLE OF COGNITION AND CULTURE IN THE PRODUCTION AND INTERPRETATION OF L2 ENGLISH NOMINAL COMPOUNDS

The present study investigates the factors that affect the production and the interpretation of L2 English Noun-Noun Compounds. In addition to the *L1 typology* (limited with compounding structure in this study) (Lardiere, 1995) on a form basis in the NNC production of the L2 learners, the study proposes two more factors: *real-world knowledge* and *culture*. The present study approaches to the interpretation process from a cognitive linguistic perspective. Analyzing learners' interpretation from a schematic view (Langacker, 1987), it is claimed that L2 learners' interpretation of L2 English NNCs is influenced by their cognitive schemas, as addressed in the study *real-world knowledge*. In other words, real-world knowledge is considered as a part of cognitive schemas by being investigated from a schematic perspective. In addition to the real-world knowledge of the learners, the present study proposes *culture (cultural schemas)* as the third factor affecting the learning process of L2 English NNCs, specifically, during the interpretation process.

To determine the effect of the proposed factors, a picture elicitation task, a grammaticality judgement test and an interpretation task developed by the researcher are conducted on the participants of the study. The participants consist of three groups: Turkish (40), Italian (40) and English (10) native speakers. Turkish and Italian participants as L2 English learners have intermediate-level English proficiency.

The results are analyzed utilizing both qualitative and quantitative methods (Independent t-test, content analysis). In the light of the results, the present study reveals important findings: (i) L1 compounding form is effective on the production of L2 English

NNCs in terms of form; (ii) L2 knowledge on the target structures is an important factor on a form basis; (iii) real-world knowledge (and relevant cognitive schemas) and cultural schemas are a significant factor in the interpretation of novel NNCs and in the existence of a specific cultural schema, the cultural schema overweighs the real-world knowledge by increasing the saliency of the cultural concept in the schema activation process; (iv) Considering the context-dependency of schemas, L2 learners of different communities differ from each other in terms of their schemas, and so, their learning process. The novel findings about the effect of L1 culture on L2 with a cognitive perspective reveals important implications for L2 teaching and calls for paying attention to the native culture of the foreign language learners.

*Keywords:* L2 English, Noun-Noun Compounds, real-world knowledge, cultural schemas, Cognitive Linguistics, Second Language Acquisition

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of the Study

Language and mind, as two intertwined phenomena, have constantly been in the focus of various disciplines from cognitive to social sciences. Considering the complex and undecodable nature of the human mind; language, as Swain (2006) defines, is seen as “a vehicle through which thinking is articulated and transformed into an artifactual form” (p.97) and consequently considered as the primary tool to have an access to mind. From the standpoint of this view, for decades, the acquisition of numerous linguistic units has been investigated in order to reveal new findings about the different aspects of the language faculty and underlying cognitive processes in mind.

Compounds, in this regard, appear to be one of the mostly investigated linguistic units in the field of both L1<sup>1</sup> and L2 acquisition. The remarkable characteristics that compounds embody attracted researchers' attention to examine this complex word formation process. For instance, on a form basis, compounds differ from derivational or inflectional word formations by being formed joining two lexemes together without the addition of any suffixes (Uygun and Gürel, 2017). Additionally, even if compounding seems as a simple word formation process consisting of two (or more) words, the constituents (head and modifier) in compounds are not semantically restricted in a certain position, as Libben (2014) also exemplifies in his study. The word *chocolate* can be the head of a compound, as in *milk*

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<sup>1</sup> See Clark and Berman, 1987; Clark, 1993, 1998 for the sample studies on the acquisition of compounds in the field of first language acquisition.

*chocolate* or act as the modifier, as in *chocolate cookie*. Furthermore, the meanings of compounds are not always smoothly predictable. In some cases, the compound may transparently reflect the separate meanings of its constituents (e.g. *apple juice*, *snow boots*), however, in other cases, the meanings of the constituents may not be visible in the meaning of the compound (e.g. *hotdog*, *deadline*, see El-Bialy, Gagné and Spalding, 2013; Lorenz and Zwitterlood, 2016). All in all, these unique and complex features of compounds can be advantageous for researchers by providing them with the opportunities to examine various aspects (morphology, syntax, semantics) of word formation and the related processes on the mind (Fiorentino, 2006). On the other hand, complexity of compounds creates certain difficulties especially for the foreign language learners in the field of SLA.

Considering that compounding is one of the most productive word formation processes in English and occurrence of novel compounds is highly frequent (Libben, 2014; Dressler, 2006), the acquisition of L2 English compounds has also been a hindrance for the L2 learners and consequently L2 English compounds have been investigated immensely. The research on L2 English compounds has generally discussed the compounding phenomenon with a more general focus, aiming to discover or test the general properties of compounding in the second language acquisition process<sup>2</sup> (Bongartz, 1998).

## **1.2 Statement of the Problem**

The research exploring L2 English compounds with a more pedagogical approach and focusing on the learning process is relatively limited (e.g. Charteris-black, 1998; Fries, 2017; Chi, 2006; Lee, 2014). The studies which approach the learning process of compounds in L2 English with a formal/generative analysis mainly focus on the L1 form by considering cross-

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<sup>2</sup> For a review of research on L2 English compounds with the focus of morphology-syntax see Olsen, 2001; Berent and Pinker, 2007, among others, for semantics see, for example, Gagné and Spalding, 2013, for pragmatics see Downing, 1977; Bauer, 1979.

linguistic differences as the main reason that creates difficulties for the L2 learners, especially on a form basis. To exemplify, Lee (2014) investigates Korean (L1) learners' number marking process in L2 English compounds. As she notes, in contrast to English, Korean does not allow either regular or irregular pluralization in compounds (e.g. *mice eater* - *\*rats eater*). She concludes with her research findings that Korean L2 learners' learning of plurals in English compounds is difficult due to their L1 (Korean) grammatical knowledge. In another research, Bongartz (1998) examines noun-noun compounds like *love song* and prepositional phrases with the same meaning like *song about love*, within a group of Czech and Chinese learners of L2 English. The results of her study also point out the effect of L1 typology stating that learners of the two groups choose the English pattern (NNC or PP) that is similar to the one in their L1. As it is seen so far, the findings of the studies analyzing L2 English compounds with a formal approach converge on the effect of L1 typology on the L2 compounding process in terms of form.

In terms of the meaning, as well, English compounds create difficulties for the L2 learners in the process of comprehension due to the semantic ambiguity they may cause. Therefore, comprehension and interpretation of L2 English compounds have also been widely investigated in addition to the form of it (Charteris-Black, 1998). Also, The L1 studies that analyze compounds with a formal linguistic approach have also attempted to categorize the semantic relationships between the constituents of the noun-noun compounds and proposed certain lists of semantic relationships, see Levi (1978) and Lees (1960) among others. Some researchers, like Downing (1977) and Bauer (1979), addressed the issue from a pragmatic aspect and argued that the meaning of the compounds are determined in the context they are used.

However, none of them were able to completely explain the question of "what kinds of interpretations are in principle possible, given a certain compound" (Plag, 2003, p.149).

From the perspective of a pragmatic analysis, it is seen that the context alone is not capable of explaining the interpretation of a certain compound (Kunduracı, 2013). Since there mostly exists more than one interpretation even in one specific context, pragmatics helps the interpreter to limit the alternatives, but do not totally explain how the interpreter chooses one over the other among the possible limited semantic relations (Ryder, 1994). In the case of the formal linguistic approach, grammar is expected to predict and explain all the formal aspects of a language and productive word structures are governed by the word formation rules. Nevertheless, in the case of noun-noun compounds, which is an extensively productive word formation process, not all possible interpretations are predictable (Ryder, 1994). For example, in English, grammar restricts the possible interpretations for a compound with the *head – modifier* categories (Maguire, Maguire and Cater, 2010). In the interpretation process of a novel nominal compound such as *dove mom*, the head (*mom*) represents the main category while the modifier (*dove*) distinguishes the meaning of the head (a kind of *mom*). Also, meanings of the constituents provide typical common semantic relations (e.g ‘for, of, about, made of’) in which the concepts each constituent represents are associated with (Gagné and Shoben, 1997). As in *dove mom*, considering the semantic properties of the head *mom* and the modifier *dove*, the first semantic relation in which *dove* and *mom* are associated could be *mom of doves* ‘a woman who has doves or takes care of doves.’ However, according to the present study, one can interpret it in numerous ways when the related context is presented.

1a. a mother sculpture *made of* dove figures

1b. a mom *like* a dove

As can be seen in the sample (1a), even though the semantic relationship ‘made of’ is generally attributed to inanimate concepts, in a special context, there might be a mother sculpture which is decorated with little doves and produced as an ornament for the Mother’s

Day. Or as in my case (1b), a child can associate his/her mother's characteristics with a dove (as innocent, delicate and sweet as a dove) and make up a nickname for his/her mother. There might even be numerous other interpretations aside from the ones above. Although grammar and the context reduce the possibilities for the learner in the interpretation process, they fail to describe a general principle for an interpreter to choose a certain alternative (or semantic relation) over the present ones for a certain compound (Plag, 2003; Ryder, 1994; Stekauer, 2005).

As can be seen, it is clear that there appears a need for a different approach that could explain the unpredictability of Noun-Noun compounds. At this point, Cognitive Linguistics provides a solution for the interpretation process of Noun-Noun compounds analyzing the meaning of the compound and its constituents with a *schematic* view (Heyvaert, 2009).

Cognitive Linguistics (CL), in general terms, is a cognitive approach to language considering the language faculty as a part of human cognition. CL puts the learner in the center as the mechanism where all mental processes occur and focus on the meaning and its perception by different individuals (Geeraerts and Cuyckens, 2007; Langacker, 2008; Taylor, 2008). Therefore, some cognitive abilities like “*symbolization, composition, categorization and schematization*” are argued to be involved in language use and linguistic processes (Heyvaert, 2009, p.375). *Schemas* are simply the stored knowledge about everything an individual gains through experiences with the outside world. They represent the knowledge units in the mind and organize the new coming information depending on the stored ones, which influences the new information processing and information retrieval from the stored knowledge. In other words, schemas also act as expectation patterns about the concepts, events or people (Rumelhart, 1980; Seel, 2012).

According to the present study, analyzing semantic relations between the constituents of nominal compounds with a schematic view provides the necessary explanation for the unpredictability of Noun-Noun Compound interpretation. To clarify, Cognitive Linguistics views the constituents of a compound as the specifications of the schema which represents the head of the compound (Langacker, 1987), which makes the predictability of the NNC dependent on the schemas on the interpreter's mind in the interpretation process. For example, according to Ryder's (1994) interpretation model, upon encountering a novel nominal compound like *dove mom* (as the present study suggests), the listener first checks his/her schemas to compare with a similar one. If more than one alternative schema is possible, the listener checks the contextual information for the clue about the meaning of the compound. As in the alternative interpretations of *dove mom*, the listener can interpret the compound as (2a) 'a woman who has doves or takes care of doves' or (2b) 'a mother somehow carries similar characteristic or physical features with a dove' when he/she first hears it. In other words, the listener checks the contextual clues to reduce the possibilities. Then, the listener compares the alternative interpretation with his/her real world knowledge. For example, he/she looks for the schemas which represent the semantic information both the constituents *dove* and *mom* share. If the previous steps fail, the listener either creates a schema representing a new semantic information by adapting the meaning of one/both of the constituents in order to find a new one shared by both of the constituents (mostly the head). In another case, (2c), if the listener hears the compound in a sentence like *The dove mom that I saw in the town center was really expensive*, this will most probably result in the listener's adapting the meaning of the head *mom* as 'a metaphor for an inanimate object', since the meaning of it is not compatible with an adjective like *expensive*.

- (2) a. mom *of* doves
- b. a mom *like* a dove

- c. a mother sculpture *made of* dove figures

As can be seen, the schemas provide a considerable explanation for the interpretation of noun-noun compounds. The present study follows Cognitive Linguistics in terms of this *schematization* assumption in order to explore the missing factors influential in the interpretation process of L2 English Noun-Noun Compounds, which appears to be failed to be explained completely with a purely formal or purely pragmatic view, as mentioned above.

### 1.3 The Purpose and Significance of the Study

The present study aims to investigate the factors affecting both production and interpretation of English Noun-Noun Compounds within a second language context. Aside from the analysis of NNCs on a form basis, the study adopts a Cognitive Linguistic approach in certain aspects and utilizes a schematic view to analyze the interpretation process of L2 English NNCs. In this regard, the present study suggests two more important factors that affect the process: *real-world knowledge* and *culture*.

Real-world knowledge as being the extralinguistic knowledge of what an individual knows about the world as a result of his/her experiences is one of the main parts of schemas (Levi, 1978; Ryder, 1994; Štekauer, 2005). Many studies point out the important role of real-world knowledge in the interpretation of noun-noun compounds (e.g. Gagné, 2002; Murphy, 1988; Stekauer, 2005). However, the present study differs from them addressing real-world knowledge as a factor influencing *L2* learners' learning process of English noun-noun compounds.

In addition to real-world knowledge, the present study argues that cultural knowledge has a crucial role in the comprehension of noun-noun compounds, and proposes *culture* (and *cultural schemas*) as the second factor that affects the learning process of L2 English noun-

noun compounds. The study examines the effect of *culture* from a cognitive perspective and addresses it in two ways: (a) as a specific type of knowledge shared by the members of a social context and (b) as the “schematic structures that organize the information” (DiMaggio, 1997; p. 263). In the case of (a) culture is viewed as culture-specific knowledge stored in our schemas. However, from a broader view, culture is also the context the schemas are constructed in. Since schemas are gained through experiences with the world, the contexts in which an individual experiences the events, concepts or people are highly influential in the construction of the schemas (DiMaggio 1997; Sharifian, 2015; Strandell, 2017).

Integrating the culture of the target language in second language teaching is not a recent research topic. Numerous studies (e.g. Brown, 2007; Byram and Morgan, 1994; Holme, 2003; Kuang, 2007) confirm the importance of involving the target culture in the language curricula or in the classrooms. For instance, Brown (2007) points out that learning a second language is inseparable from learning the culture of that language while Jiang (2001) suggests native foreign language teachers that experience culture shock to use it as an opportunity to teach their cultures to their students. However, there is another issue even more important for the second language acquisition process but neglected to be addressed so far: the native culture of the second language learner. In this regard, this is a novel study examining the effect of the native culture on the learning process of a linguistic structure (English noun-noun compounds) with a cognitive (linguistic) perspective, which will reveal important implications for the second language education.

#### **1.4 Research Questions and Hypotheses**

The study explores noun-noun compounds considering their productive feature, which also provides the opportunity to test the research questions in terms of both form and meaning. The research questions and hypotheses are presented below:

1. *Are there any differences in the way L2 learners of different speech communities produce and interpret English noun-noun compounds?*
2. *What are the factors that affect the production and the comprehension of noun-noun compounds in L2 English?*
3. *Which linguistic component among the followings, morphology, syntax, and semantics, is the most effective force in the process of L2 English noun-noun compound production and interpretation?*

H1. The groups of different speech communities are expected to differ in both the production and the interpretation process of noun-noun compounds.

H2. The factors expected to be influential on the L2 compounding process are L1 compounding structure, real-world knowledge and culture. In the production process, L1 compounding structure is expected to be effective only in terms of form. In the interpretation process, learners' schemas (real-world knowledge and culture) are expected to affect the process.

H3. The meaning is considered to be the driving force in both L1 and L2 language acquisition, processing and production. Thus, in this study, semantics is expected to be more influential than morphology and syntax in the L2 compounding process.

## 1.5 Summary of Chapter 1

In this chapter the background, the purpose and the scope of the study is addressed. Noun-Noun compounds embody unique characteristics that provide researchers with the opportunity of investigating various aspects of this structure (morphology, syntax, semantics). However, these complex characteristics create some difficulties for L2 learners of NNCs. This study investigates the interpretation and the production process of L2 English NNCs and argues that approaching especially the interpretation process from cognitive linguistics provides the solution for the unpredictability of NNCs, which other approaches fail to explain. In addition to L1 form, the present study proposes real-world knowledge and culture as the factors affecting the learning process. The real-world knowledge and culture (cultural schemas) are addressed from a schematic perspective and considered as a main part of cognition.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Review of Theoretical Background

##### 2.1.2 Compounds in Cognitive Linguistics

Cognitive Linguistics, in broad terms, considers compounding as a purely semantically-driven cognitive phenomenon. Language is argued to be a network that is the combination of “phonological, semantic and symbolic units which are the association of a semantic with a phonological unit (e.g. [[MOTHER]/[mʌð.ər]])” (Langacker, 1987, p.62). Within this perspective, compounding (*composition* as referred in CL) is considered as a cognitive ability to combine two symbolic units by creating syntagmatic relations between them (Langacker, 1987). For example, the nominal compound *mother tongue* is the combination of symbolic units of [[MOTHER]/[mʌð.ər]] and [TONGUE]/ [tʌŋ]. The combination process of these two components is explained semantically through *schematization*.

According to CL, the language user constantly makes comparisons and categorizations in the processing of information. At this point, *schemas* act like a classification and organization system comparing encountered information with the conventional units that already exist in a speaker’s mind. (Langacker, 1999). In the case of compounds, in order to create the semantic relations between the constituents and form a compound, the language user looks at the schemas representing the head of the compound (or the profile determinant in CL terms) and checks if the schemas representing the modifier is a part of the schemas of the head or associated with it. In this way, CL attributes the role of

creating compounds to the language user instead of the language (Langacker, 1987), which provides the solution for the unpredictability of the semantic relations in the compounds.

The present study utilizes CL in terms of the *schematization* ability of the language user. It is argued that the interpretations of the compounds, especially the novel ones, are highly dependent on the schematization process on the mind of the language user. Ryder (1994) is the first researcher who analyzes the novel noun-noun compounds with a schematic perspective. She investigated the subject with English native speakers in an L1 context and concluded that the participants depended on their real-world knowledge and the already established schematic units (or conventionalized units) in the language while interpreting novel nominal compounds.

As mentioned, Ryder (1994) conducted her study in an L1 context in which all participants share the same mother tongue and live in the same community in which they experience the events, concepts, people and the world. However, in the case of an L2 context, as the present study argues, the language learner also brings his/her schemas gained in the environment or community he/she lives into the learning process, which could create differences in the comprehension of the compounds in L2. Therefore, the present study proposes *culture* as another factor affecting the interpretation process of L2 English NNCs.

### **2.1.3 Cultural Schemas**

The present study addresses *culture* from a schematic perspective and consider it as a kind of schema the language learner embodies. Cultural schemas, with its simplest term, are explained as “shared cognitive schemas” by the members of a social context (DiMaggio 1997; Nishida, 2005; Strandell, 2017). From a narrow perspective, cultural schemas represent the specific knowledge of traditions and customs shared by a social group (Strandell, 2017). On the other hand, with a broader perspective, culture covers everything in the context in

which we experience the world, because people build their schemas interacting with the events, situations, people and concepts, which are all shaped by the context itself again (DiMaggio 1997; Sharifian, 2015; Strandell, 2017). In the present study, the cultural schemas are considered the total of both the narrow and the broad view considering that meaning and comprehension are affected by both cases.

## 2.2 Structure of Compounding

In this section, a brief overview of the Noun-Noun compounds in Turkish and Italian is presented to provide the reader with a better understanding of the results of the study.

### 2.2.1 Noun-Noun Compounds in Turkish and Italian

Noun-Noun compounds in Turkish and Italian differ from each other from morphological aspects. Turkish NNCs constitute a highly productive word formation patterns like English (Kunduracı, 2013). On the contrary, compounding in Italian is not a productive structure and NNCs are one of the less common compound types among the others (e.g. Adjective-Noun or Verb-Noun) (Masini, 2009, 2019).

(3)	a.	seyahat	acente- <i>si</i>	b.	agenzia	viaggi <sup>3</sup>
		travel	agency-CM		agency	travel
		‘travel agency’			‘travel agency’	

As can be seen in (3a), Turkish N-N compounds are structured with a head-final position in which the modifier *seyahat* ‘travel’ precedes the head of the compound *acente* ‘agency’. Also, The Turkish compound marker *-si* is added in the combination of two nouns *seyahat acente-si* ‘travel agency-CM’ (Kunduracı, 2013). On the other hand, the N-N

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<sup>3</sup> The Italian examples are taken from Masini (2019).

compounds in Italian are formed in a head-initial position in which the head *agenzia* ‘agency’ precedes the modifier *viaggi* ‘travel’ as seen in (3b) (Masini, 2019).

Furthermore, N-N compounds that are highly productive word formation patterns in Turkish and English mostly correspond to another productive structure in Italian: N+Prep+N. The examples are presented below<sup>4</sup>:

(4)

a.	<i>casa</i>	<i>di</i>	<i>cura</i>	c.	<i>camera</i>	<i>a</i>	<i>gas</i>
	home	of	treatment		room	at	gas
	‘nursing home’				‘gas chamber’		
b.	<i>cibo</i>	<i>per</i>	<i>cani</i>	d.	<i>ballo</i>	<i>in</i>	<i>maschera</i>
	food	for	dogs		ball	in	mask
	‘dog food’				‘masked ball’		

As can be seen from the examples in (4) above, various prepositions are possible to be used to construct N+Prep+N structures in Italian. However, the most commonly used prepositions in this structure are *di* ‘of’, *a* ‘at’ and *da* ‘from’. The head of the phrase is on the left (e.g. *casa di cura* ‘nursing home’) and the modifier specializes the meaning of the head with the help of a preposition (e.g. *cibo* ‘food’ and *cibo per cani* ‘dog food’) (Masini, 2009).

From a semantic perspective, the meaning of both the Turkish and the Italian N-N compounds depends on the head of the compound and is specialized by the modifier. The semantic relationships built between the constituents of the compounds in both languages differ considering the more productive nature of Turkish N-N compounds. Italian N-N

<sup>4</sup> The examples are from Masini (2009).

compounds create three main semantic relationships between the constituents: attributive, coordinate and subordinate (Masini, 2019). The examples are presented below<sup>5</sup>:

(5)

- |  |  |
|--|--|
| <p>a. <i>pesce spada</i> (attributive)<br/>         fish sword<br/>         ‘sword fish’</p>           | <p>b. <i>divano letto</i> (coordinate)<br/>         sofa bed<br/>         ‘sofa bed’</p> |
| <p>c. <i>agenzia viaggi</i> (subordinate)<br/>         agency travels<br/>         ‘travel agency’</p> |  |

In the sample for the attributive relation (5a), the modifier *spada* ‘sword’ represents a property of the head *pesce* ‘fish’ (in a metaphorical way here). In the case of coordinate relations, Italian N-N compounds may have two heads (or be headless) as in (5b) both *divano* ‘sofa’ and *letto* ‘bed’ are the head. Lastly, (5c) displays a subordinate relation as *travel agency* is a sub-class of *agency* (Masini, 2019).

In the case of Turkish N-N compounds, Kunderacı (2013) argues that the constituents in NNCs have an association (ABOUT) relation semantically, which is a formal semantic function and involves more specific types as follows: ASSOCIATION, SOURCE, BELONGING TO, PURPOSE, PART-WHOLE, LOCATION, MEANS AND IDENTIFICATION (Kunderacı, 2013). Her examples illustrating these different types of the semantic association relation are presented below:

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<sup>5</sup> The examples are from Masini (2019).

(6)

- |  |  |
|--|--|
| <p>a. tatil hayal-i (ASSOCIATION)<br/>holiday dream-CM<br/>'holiday dream'</p> | <p>b. badem süt-ü (SOURCE)<br/>almond milk-CM<br/>'almond milk'</p>                |
| <p>c. kahve koku-su (BELONGING TO)<br/>coffee smell-CM<br/>'coffee smell'</p>  | <p>d. tatlı tabağ-ı (PURPOSE)<br/>dessert plate-CM<br/>'dessert plate'</p>         |
| <p>e. şeftali ağac-ı (PART-WHOLE)<br/>peach tree-CM<br/>'peach tree'</p>       | <p>f. su bale-si (LOCATION)<br/>water ballet-CM<br/>'water ballet'</p>             |
| <p>g. uçak seyahat-i (MEANS)<br/>plane trip-CM<br/>'air travel'</p>            | <p>h. fizik ders-i (IDENTIFICATION)<br/>physics lesson-CM<br/>'physics lesson'</p> |

As can be seen from the examples of Masini (2009) and Kunduracı (2013), Turkish (L1) and Italian (L1) NNCs are quite different from each other, especially in terms of form. Also, Italian NNCs are head-initial and non-productive in contrast to the target language English (L2). This section is expected to provide insights into the formal and semantic discussions of the answers produced by the participants in the following chapters.

### 2.3 Summary of Chapter 2

In this chapter, a review of how compounds are addressed in Cognitive Linguistics is provided. This study utilizes CL in the schematization assumption of this approach. According to CL, the interpretation of compounds, especially novel ones, depends on the

cognitive schemas of the learners. In other words, CL assigns the compound creation role to the language user himself rather than the language and its rules (Langacker, 1987), which solves the problem of unpredictability of the NNCs. Furthermore, this chapter gives a short review of how NNCs are structured in L1 Turkish and L1 Italian to provide a deeper understanding for the formal discussions of the findings in chapter 4.



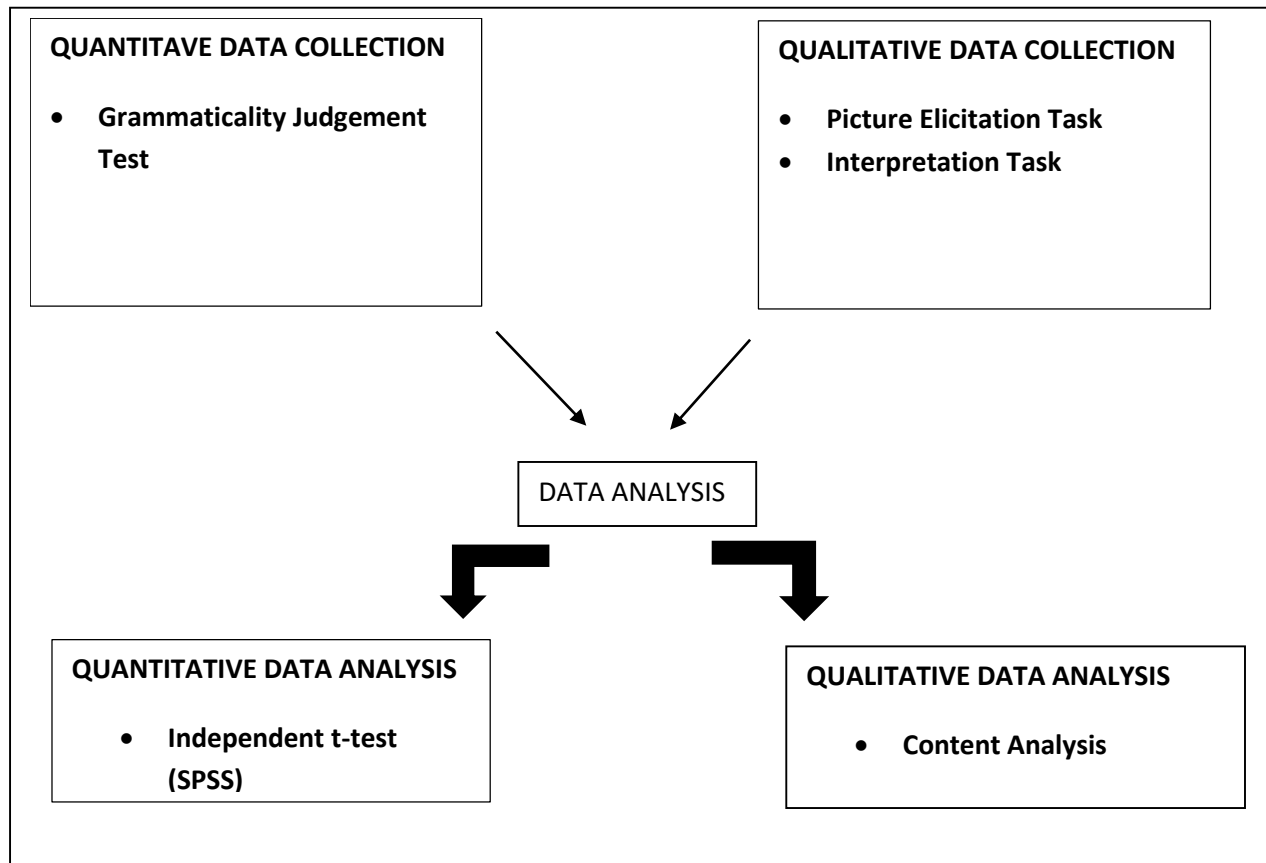
## CHAPTER 3

### METHODOLOGY

The present study is conducted using a mixed-method approach which includes both quantitative and qualitative data collection and analysis methods. Utilizing a mixed method provides a better investigation and deeper understanding of the collected data as Creswell (2012) underlines. The mixed-method approach includes different research designs commonly used in educational studies. The present study uses *the Convergent Parallel Design*, which “simultaneously collect both quantitative and qualitative data, merge the data, and use the results to understand a research problem” as expressed by Creswell (2012, p.540). In this framework, the present study aims to conduct a picture elicitation task and an interpretation task as a qualitative data collection method and conduct a grammaticality judgement test as a qualitative and quantitative data collection method to support the findings of qualitative tools. In the data analysis process, an independent t-test, which is a quantitative data analysis method, will be conducted to statistically analyze the data of picture elicitation task in addition to descriptive statistics. Regarding the interpretation task, the data will be analyzed through content analysis by coding the answers thematically in the light of findings. The design of the study is shown below to illustrate the process.

**Figure 1**

*The design of the present study*



### 3.1 Participants

The participants of the study consist of 90 subjects that includes 3 groups from the speech communities of Turkish, Italian and English. Their ages vary from 18 to 50 and the gender distribution of all subjects is 41 females and 49 males. In the light of demographic data collected from the participants, one of the Italian participants is detected as bilingual and the participant's answers were removed from the study in order to prevent intervention of two mother tongues and cultures. This participant was replaced with another Italian participant

the same conditions to equate the numbers of Turkish and Italian group. The participants of all groups are selected using *purposeful sampling* in which the participants of each group are chosen considering each participant embodies the characteristics of their own L1 and culture well (Creswell, 2012). Turkish and English groups both consist of students and are selected combining two classes in their school. The classes are determined according to their English proficiency level and all 3 groups are considered as homogenous considering all members in Turkish and Italian groups are in the same English proficiency level and all 3 groups are typical representatives of their own culture. Lastly, the participants of English group are selected among the native English instructors in the university on a volunteer basis.

The first group includes 40 students (female:24, male:16) from Kadir Has University, English Preparatory School. The average age of the group is 19.25, ranging between 18 and 21. They are all Turkish people who were born and grew up in Turkey, and all have been taking English classes at school for more than 10 years. All Turkish participants' current English proficiency level is intermediate, determined by the placement exam which was prepared and conducted by Kadir Has University English Preparatory School in the beginning of the 2019-2020 academic year in which the data was collected. The participants' majors vary from positive sciences like engineering to social sciences like law, international relations and psychology.

The Italian group of the study consists of 40 (female: 13, male: 27) high school students in Istituto di Istruzione Superiore Aldini Valeriani, which is a vocational technical high school in Bologna, Italy. Their ages range between 18 and 19 (average age: 18.24). All Italian participants are Italian native speakers who were born and grew up in Italy. They have been taking English classes for more than 10 years at school. All the participants of this group are in their last year in high school. Their English proficiency has been assessed formatively three times a semester in each year of the high school with the exams prepared by

the English Language Committee in the school. Also, the students have been evaluated with summative assessment by their English teacher. All the Italian participants' English proficiency level is considered intermediate in the light of the exam results conducted by the school and the participants' English teacher's confirmation. Since the participants study in a technical vocational high school, they all chose their areas in their first year of the high school. They are all chemistry majors and have been taking mainly classes specific to the field of chemistry for 3 years.

The English group of the study consists of 10 English native speakers (female: 4 male: 6), who work as an English instructor in Kadir Has University, English Preparatory School. Their ages are between 28 and 50 (average age: 37.1). They all have been living in Turkey for more than 5 years and they are familiar with the Turkish language and the Turkish culture. 9 of the participants speak Turkish with a proficiency level enough to keep daily conversations with Turkish native speakers. Only one of the participants have been in Turkey for 1 year and does not speak Turkish well. 7 of the participants are married to a Turkish and know about Turkish customs, traditions and daily life quite well.

### **3.2 Data Collection Tools**

In the present study, four instruments were used to collect data: a demographic survey, a picture elicitation task, a grammaticality judgement test, and an interpretation task.

#### **3.2.1 Demographic Survey**

The demographic survey (see Appendix A) includes 7 questions regarding the age, gender, mother tongue and English learning background was designed to be used to gather demographic information about the participants.

### 3.2.2 Picture Elicitation Task

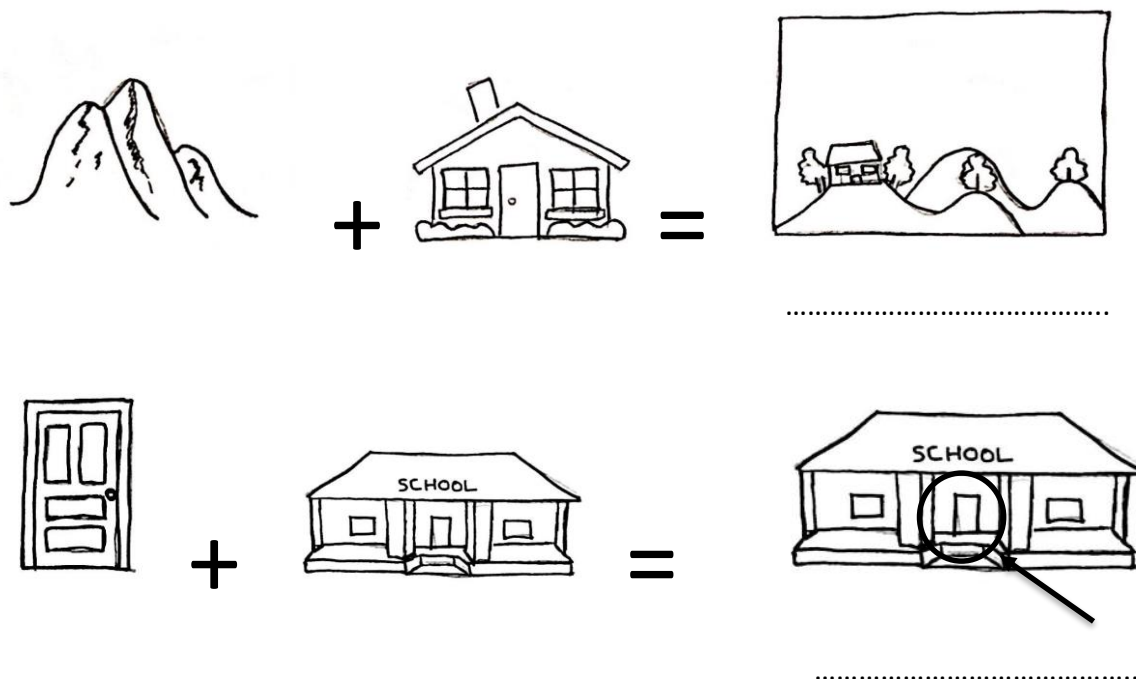
The picture elicitation task (PET) (see Appendix B) is designed to collect data regarding the three groups' general pattern preferences used to express the same meanings and determine the effect of L1 and schemas (real world knowledge and culture) on the groups' answers, which refers to the first and second research questions of the present study. PETs are widely used in studies which focus on compounds both in first and second language acquisition (e.g. Bongartz, 1998; Downing, 1977; Lardiere, 1995; Ryder, 1989;). The present picture elicitation task was designed following the rationale of PET in Downing's (1977) study. The present study chooses to use a PET because they stimulate participants to produce answers without focusing on the target language structures, which is crucial for the purpose of the present study. Since the participants are given only pictures, the intervention of the verbal task-priming effect is prevented.

In the design process of the present picture elicitation task, 50 English Noun + Noun compounds (NNC) were selected. In order to test the effect of the L1 compounding form and schemas on participants' NNC production, the NNCs were formed as both lexicalized and novel compounds (see Kunduraci, 2013 for the distinction between these). 10 out of 50 NNCs were chosen from lexicalized compounds in English like *candy apple*, *chef hat*, *tomato soup*. The rest 40 of the compounds consist of novel compounds that are also classified in two groups. The first group of the novel compounds includes 38 compounds that English (speakers) would not use but which are semantically possible such as *cat blanket* 'a blanket designed only for the usage of cats', *bird doctor* 'a doctor that treats only birds', *watermelon fork* 'a fork used for eating only watermelons'. The second group of novel compounds consists of two compounds that would not exist in English and be semantically rare or weird: *chair table* 'a chair designed to be used only with a table', *notebook pencil* 'a pencil produced to be used only with a notebook'

Upon the NNC selection process, three pictures were drawn to describe each compound as a whole and their components separately to guide the participants more effectively and to ensure that the concept chosen by the researcher is perceived and named by the participant. Each target concept originally chosen as a nominal compound can be also expressed in the form of a possessive phrase (PossP<sup>6</sup>) or a noun phrase with an embedded prepositional phrase headed by *of* as in *school gate* (compound)/ *gate of school* (NP with a PP)/ *school's gate* (Possessive Phrase) or *mountain house / house in mountain*. Some sample pictures used are shown in Figure 2.

**Figure 2**

*Samples from the Picture Elicitation Task*



Both lexicalized and novel compounds are jumbled and distributed in the task in order to avoid sequencing them successively and consequently priming participants for a specific group of compound. Also, the order of the pictures describing the two constituents of each compound was arranged randomly not to impact the word order in the participants' answers.

<sup>6</sup> Abbreviation as used in Kunduracı, 2013

All the pictures used in the picture elicitation task were drawn by the researcher herself in order to prevent copy right issues.

### 3.2.3 Grammaticality Judgement Test

To augment the results of the picture elicitation task, a grammaticality judgement (GJ) test (see Appendix C) was developed. GJ tests are broadly benefitted in linguistics and second language research to elicit data about participants' judgements on whether a language structure is acceptable or not. Also, GJ tests provide data about the participants' opinions on the structures that they might not utter in a production task (Mackey and Gass, 2005). Thus, the present study uses a GJ test in order to obtain data on the structures that may have not been produced in the picture elicitation task and to deeply understand the impact of the L1 compounding form and schemas on the L2 compounding process depending on the judgements made on different forms used to express the same meaning (concept).

The GJ test consists of 30 definitions that include three options to be used to express each definition. The test is designed using a Likert scale that includes points of 10 (grammatically correct), 5 (not sure) and 0 (ungrammatical). 30 NNCs including 5 lexicalized and 25 novel compounds were selected differently from the picture elicitation task in order to avoid priming the participants' answers. 30 definitions were formed aiming the compound form, but a possessive phrase (PossP), a noun phrase with an embedded prepositional phrase with *of* (ofNP) and a NNC were placed in the options and the participants were asked to give points (10-5-0) to these options considering the given definition. Instead of marking only one option as 10, 5 or 0, the participants were instructed that they might use one score more than once or not use one at all if they would not prefer to. In this way, it is aimed to obtain more data for each structure.

### 3.2.4 Interpretation Task

With the aim of collecting data about the influence of *culture* and *real world knowledge* on the compounding process, a semantic interpretation task demanding participants to write definitions for the given novel NNCs was developed. As the present study follows a cognitive linguistic approach in certain aspects, testing the understanding of a meaning is considered as the best way to test the impact of schemas that embody both culture and real world knowledge on the learning process of L2 English NNCs. Thus, interpretation tasks are utilized widely in the field of second language acquisition as also underlined by Mackey and Gass (2005). Considering that cultural background and real world knowledge are not overtly observable, investigating the semantic interpretation of novel compounds is an eligible method to have an access to both of them. In this study, all the novel NNCs were presented in a decontextualized form to eliminate the influence of context and to test only the effect of the culture and the real world knowledge.

To elicit meaning, 15 novel NNCs were formed including cultural elements and real world knowledge. 7 of the compounds represent a tradition specific to the Turkish, the Italian and the English cultures. To exemplify, *guest slipper* is one of the items included in the interpretation task that represents ‘a pair of slippers kept at Turkish houses to offer guests’. Similarly, 3 Turkish, 3 English and one English specific customs were selected and expressed with a novel NNC in the task.

The rest of the novel NNCs were designed to represent a concept common to the members of all the three groups. To test the impact of the real world knowledge, semantic ambiguity of novel compounds was utilized. Compounds like *restaurant fish* ‘a kind of fish belonging to a restaurant / served in a restaurant / produced for restaurants’, *dog bone* ‘bones dogs play with / body part of dogs’, *kangaroo milk* ‘milk from kangaroos / milk for

kangaroos', which could be interpreted in different ways were presented in L2 English. The participants were instructed to explain what they think each compound might mean in either English or in their mother tongue in order to put the focus on the presented concept only and make the participants comfortable while explaining their interpretation. In this way, possible negative effects of low proficiency level in the target language is aimed to be prevented.

### **3.3 Procedures**

The data collection process was completed in two successive days for each group. Before starting the data collection process, all the three tasks were explained in the class by the researcher and one sample question similar to the ones in the tasks were practiced by the participants to ensure that the procedure was understood completely.

The data was collected in the 2019-2020 academic year for all groups. All the data collection tools were conducted in the participants' school as a whole class session for the Turkish and Italian groups in two successive days since Turkish and Italian participants, in each group, are the classmates. English participants completed the tasks individually in one day, upon explaining the aim of the study and giving the instructions for the tasks.

On the first day, the picture elicitation task (PET) was conducted in all the three groups upon answering the demographic survey. The participants were given 1 hour to complete the task. The pictures in the PET were also projected on the board in the class and the participants were allowed to ask questions for the pictures that they did not understand. The researcher explained the concepts on the pictures in whole sentences avoiding using compounds or phrases not to affect participants' answers. Turkish and Italian participants were not allowed to use dictionaries in order to gather answers produced by only the participants themselves. Instead of dictionaries, they were encouraged to ask for the words that they did not know in English and the unknown words in English were told to the

participants in one word only form by the researcher in order to avoid priming participants to choose compounds or phrases. After one hour, the papers were collected by the researcher and the participants were told that the last part of the data collection would be conducted the following day.

On the second day of the data collection, the GJ tests and the interpretation task were applied successively. The participants were given one and a half hour in total for completing these two tasks. The GJ test was conducted after the PET in order to avoid potential priming. Upon starting the GJ test, the procedures were explained to the participants. The participants were instructed to answer without spending too much time on it. No internet access or dictionary was allowed during the session. The participants were allowed to choose the same score (10-5-0) more than once in order to test the possibility that two or more structures would be preferred equally for the same target unit.

After completing the GJ test, the participants were instructed to continue with the interpretation task that included 10 novel compounds to test the effects of culture and real world knowledge. The participants were asked to write explanations for the given compounds about what they think each compound could refer to. They were allowed to use their mother tongue while writing their explanations in order to prevent possible hindering effects of L2, considering the participants' proficiency levels. At the end of the session, the papers were collected by the researcher and saved to be analyzed.

### **3.4 Data Analysis**

As mentioned before, the present study uses both qualitative and quantitative analysis methods. To test Hypothesis 1, the data of PET was analyzed and, importantly, it was found that 4 patterns were used to express the concept on the picture in all the three groups. The participants' answers were coded under these 4 pattern groups (Noun-Noun Compound,

Possessive Phrase, Noun Phrase with an *-of* phrase and, Prepositional Phrase without *of*). The frequencies of each pattern in all the groups were calculated using descriptive statistics. To increase the validity of the results, inferential statistics was utilized. Four independent t-tests for each pattern were conducted to test whether the differences between the Turkish and Italian groups' pattern preferences are statistically significant. The English group, as being the native speaker group, was not included in the independent t-tests.

As the second step of the data analysis of PET, the data was analyzed and common mistakes in the Turkish and the Italian groups were detected to test the factors hypothesized in Hypothesis 2 and 3. The mistakes were coded under 3 mistake types (constituent order mistakes, incorrect uses of the genitive *-s*, and incorrect uses of PPs with *of*) and frequencies for each were calculated using descriptive statistics.

With the aim of augmenting the results of PET, Hypotheses 1 and 2 were tested again with the grammaticality judgement test. All scores (10-5-0) given for each structure (Noun-Noun Compound, Possessive Phrase, Noun Phrase with an *-of* phrase and, Prepositional Phrase without *of*) were counted separately and the frequencies of each score given for each structure were calculated using descriptive statistics.

As the last data collection tool, the data obtained from the interpretation task was analyzed by using content analysis to test the culture and the real world knowledge factors stated in Hypothesis 2. The answers were coded in terms of semantic relationships created between the units of the noun-noun compound in the interpretation process. In the coding process, Kunduracı's (2013) semantic relationship list proposed for the (Turkish) novel compounds were utilized. The answers were classified under one of the titles of "association, source, belonging to, purpose, part-whole, location, means and identification" (Kunduracı, 2013, p.34) according to the semantic relationship created. The frequency of each title was

calculated using descriptive statistics for all the three groups. The results of the English group, as the representative of the community and culture of the target language, was also included to be compared with the other groups.

### **3.5 Summary of Chapter 3**

In this chapter, the methodology of the study, characteristics of the participants, the data collection tools and the data analysis process are explained. This study utilizes a mixed-method approach and uses both quantitative and qualitative data collection and analysis methods. A picture elicitation task, a grammaticality judgement test and an interpretation task are conducted to collect data. In the data analysis process, content analysis and independent t-test are implemented.

## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 Results of Picture Elicitation Task

The picture elicitation task (PET) as a written production task provided sufficient amount of data to examine the L2 compounding process on both a production and interpretation basis in accordance with the research questions of the present study. The data of PET were examined using both descriptive and inferential statistics to answer the following 2 research questions:

1. *Are there any differences in the way L2 learners of different speech communities produce and interpret English noun-noun compounds?*
2. *What are the factors that affect the production and the comprehension of noun-noun compounds in L2 English?*

With the aim of detecting any differences or similarities regarding the NNC production among the groups, all groups' answers were examined and it was found that 4 main patterns are used to express the meaning of the concepts given on the pictures. These patterns are "Noun-Noun Compound, Possessive Phrase, Noun Phrase with an *-of* phrase and, Prepositional Phrase without *of*. The answers given in the form of NPs with embedded Prepositional Phrases with *of* are not included in the *Prepositional Phrase* group in order to examine the effect of L1 syntax, considering that there are two types of phrases to express possession, namely NPs which include prepositional phrases with *of* such as *the name of the city* and possessive phrases with the genitive suffix *-s* such as *the city's name*. Detecting the participants' preference between these to express the same meaning is important to answer the research questions of the study. The participants' answers are coded under these 4 pattern

groups and the frequencies for the preferences of each pattern across the groups are shown below in Table 1. The results of the English group are shown in the table just to provide a basis for the typical preferences of native speakers in the target language rather than comparing them with the other groups.

**Table 1**

*Frequencies of patterns used across the groups*

<b>L2</b>	<b>Noun-Noun Compound</b>	<b>Possessive (Noun) Phrase</b>	<b>Noun Phrase with <i>of</i> Phrase</b>	<b>Prepositional Phrase</b>
L1 Turkish	67.71%	15.20%	15.09%	1.98%
L1 Italian	64.95%	18.49%	9.81%	6.73%
L1 English	92.19%	2.33%	4.33%	1.14%

As it is seen from Table 1, learners' pattern preferences to express meaning of the concepts on the pictures show differences across the groups. Initially, it is seen that the English group as the native speakers prefer using NNCs with a considerably big proportion (92.19%) as the expected result of the productivity of Noun-Noun compounds in English. In this regard, all the three groups show similarity choosing NNCs as their first choice although deeper investigation between the L2 learner groups (Turkish - English) is needed to be conducted to answer the research questions. Considering L2 learner groups, out of 1919 responses given by the Turkish participants in PET, 67.71 % of the responses are in the form of Noun-Noun compounds (NNC) while Italian participants used NNCs with 64.95 % of the total 1682 responses given in their group. In both groups, the most frequently used pattern is Noun-Noun compounds with a small difference of 2.76 %. However, Turkish and Italian groups differ in their preferences of other patterns. While the Turkish participants use

possessive phrases (15.20%) and noun phrases with embedded *of* phrases (15.09%) as their second most frequent pattern with an insignificant difference (0.11%). The Italian group chooses to use possessive phrases as their second preference (18.49%) and noun phrases with embedded *of* phrases as the third most frequently used pattern (9.81%) with a considerable difference between the percentages of the second and the third choice in contrast to the Turkish group.

The findings about the Italian group contradicts the hypothesis 2 (H2) of the study predicting to see the effect of the L1 compounding structure on a form basis. Since Noun – Noun compounds are not so productive in Italian in comparison to English and Turkish (Masini, 2019) and mostly prepositional phrases are used to express the meanings formed in compounds in English, the present study initially expected to find Noun phrases with embedded *of* phrases or Prepositional phrases as the most frequently chosen pattern in the Italian group. To illustrate, an example from the picture elicitation task is provided below:

- (7)
- |     |               |      |                  |           |
|-----|---------------|------|------------------|-----------|
| (a) | tomato        | soup | (item 22 in PET) |           |
|     | (b) zuppa     | di   | pomodoro         | (Italian) |
|     | soup          | of   | tomato           |           |
|     | 'tomato soup' |      |                  |           |
|     | (c) domates   |      | çorba-sı         | (Turkish) |
|     | tomato        |      | soup-CM          |           |
|     | 'tomato soup' |      |                  |           |

As it is seen in the examples (7) above, the meanings expressed in a NNC form in English (7a) are mostly expressed in the form of “noun phrases built with –of” in Italian (7b) *zuppa di pomodoro*. On the other hand, as it is seen in the example (7c), Turkish nominal compounds carry features similar to their English equivalents being head-final. In this regard,

the findings of the Turkish group support Hypothesis 2 of the present study considering that the most frequently preferred pattern is Noun-Noun compounds in the Turkish group<sup>7</sup>.

Considering the inconsistency between the Turkish and the Italian group in terms of the effect of the L1 form on the L2 compounding structure, there appears to be a need to test the significance of the differences between the L2 learner groups: Turkish and Italian. Thus, inferential statistics was used in addition to descriptive statistics which was used to show the frequencies of the pattern preferences across the groups. The native speaker English group was not included in this analysis. Four independent t-tests were conducted to test whether the differences between the Turkish and the Italian groups' pattern preferences were statistically significant. The results of the independent t-tests (Table 3) and Levene's Test for Equality of Variances<sup>8</sup>, which confirms the validity of the results of the t-tests (Table 2) are shown below:

**Table 2**

*Levene's Test for Equality of Variances*

	<b>F</b>	<b>Sig.</b>
NNC	3,764	,056
PossP	6,000	,057
NP with <i>-of</i>	5,881	,068
PP	7,718	,059

As can be seen in the table below, the significance value for all the patterns (NNC: 0,056 PossP: 0,017 NP with *-of*: 0,018 PP: 0,007) for Levene's Test for homogeneity of

<sup>7</sup> The reader can refer to Schaaik (1996), Göksel (2009), and Kunduracı (2013) for the productive Noun-Noun compounds and the compound marker in Turkish.

<sup>8</sup> A test devised by Levene (1960), which is used to test if both groups have the same variance as an assumption necessary for the validity of the implication conducted in inferential statistics (Glass, 1966).

variance is bigger than  $\alpha = .05$  ( $\text{sig} > .05$ ). Thus, the two samples of the Turkish and the Italian participants have equal variances and independent t-test results are valid.

**Table 3**

*Comparison of pattern usage proportion mean scores between Turkish – Italian groups*

	<b>t</b>	<b>Df</b>	<b>Sig. (2-tailed)</b>	<b>Mean difference</b>	<b>Std. Error difference</b>
NNC	2,476	78	,015	5,25000	2,11995
PossP	-,466	78	,642	-,72500	1,55433
NP with <i>-of</i>	2,925	78	,005	3,27500	1,11972
PP	-3,183	78	,002	-1,87500	,58899

\*Confidence Interval Percentage at 95%

\*\* Critical t region =  $\pm 1.99$

As the results of the independent t-tests reveal, there is no significant difference in the mean pattern preference proportions of the Turkish and the Italian participants in the sample (NNC  $t(78) = 2,246$ ,  $p = ,015$ ,  $d = 0.05$ , PossP  $t(78) = -,466$ ,  $p = ,642$ ,  $d = 0.01$ , NP with *-of*  $t(78) = 2,925$ ,  $p = ,005$ ,  $d = 0.06$ , PP  $t(78) = -3,183$ ,  $p = ,002$ ,  $d = 0.06$ ). These results suggest that participants' L1 does not appear to have a significant effect on their pattern preferences when they are asked to express the meaning of a NNC.

The findings so far provide important data to answer the first research question. Unlike what is hypothesized initially (Hypothesis 1), the results of the inferential statistics data analysis show that L2 learner groups do not differ in their pattern preferences and choose to use NNCs to express the meaning like the native speaker group of English. However, this could be interpreted as an unavoidable side effect of naming tasks as Downing's study (1977) on compounds also points out. Thus, the data obtained from the picture elicitation task was examined and analyzed from another aspect.

From this point on, the second step of the PET data analysis will be presented under two subtitles emphasizing the effect of the factors predicted in Hypothesis 2.

#### 4.1.1 Impact of L1 Compounding Structure on NNC Production

Even though the results of the first evaluation of the picture elicitation data show no important difference among the groups regarding their pattern preferences to express the meaning of a NNC, it was detected that the groups differ in the way they make mistakes during the compounding process. Considering that mistakes constitute a crucial natural phenomenon that enables to examine the SLA process, the mistakes made by the Turkish and the Italian L2 learners of English in PET were analyzed. In the process of analyzing the mistakes, the answers obtained from the English group were used as a basis for the target language and also, with the aim of understanding the effect of L1 in the Italian group more effectively, an Italian native speaker was consulted for the Italian equivalences of the items given in the picture elicitation task.

All the answers given for the pictures in PET were examined and categorized for the Turkish and the Italian group separately. The categories of mistakes and the frequencies for each mistake type are shown in Table 4 below:

**Table 4**

*Frequencies of mistake across the categories*

	Constituent order mistakes	Incorrect use of the GEN Suffix	Incorrect use of the <i>of</i> Phrase
Turkish	35.46%	43,26%	21.27%
Italian	39.16%	60.83%	0%

As it is seen in the Table 4 above, three main mistake types were detected in the answers given for PET. Both groups made mistakes on the usage of the GEN Suffix as the most frequent category. Out of 134 mistakes detected in the Turkish group, 43.26% of the total is about the incorrect usage of GEN suffix while the Italian participants made mistakes on the usage of the GEN suffix with the proportion of 60.83% out of 429 mistakes in the Italian group. As the second most frequently made mistakes, both groups' answers point out the word order mistakes category (incorrect order of the NNC constituents): the Turkish group with the proportion of 35.46% and the Italian group with 39.16%. In the case of the incorrect use of the *of* phrase, the Turkish group made the least amount of mistakes with 21.27% while no mistakes of this category were detected in the Italian group.

These results on the frequencies of the mistakes support Hypothesis 2, which predicts that the L1 compounding structure will be influential on the L2 compounding production on a form basis. To elaborate the effect of L1, some sample answers from PET are presented below. (8), (9) and (10) are the compounds expected to be formed to express the concept given on the picture in PET. (8a), (9a) and (10a) show the answers given by the participants with the incorrect constituent order. And, (8b), (9b) and (10b) are the Italian equivalents of the concepts given in (8), (9) and (10).

(8) grandmother chair (item 28)

(8a) \*a.chair grandma

(8b) *sedia della nonna*

(9) frog song (item 20)

(9a) \*song frog

(9b) *canto della rane*

(10) cat blanket (item 29)

(10a) \*blanket cat

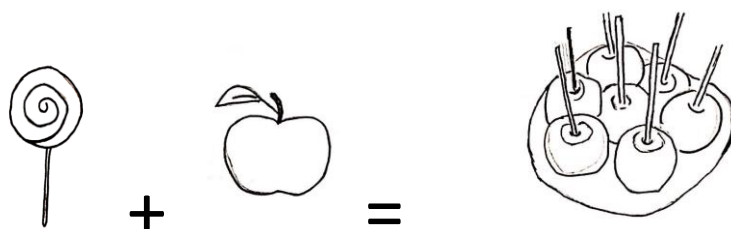
(10b) *coperta per gatto*

In the examples given above, some word order mistakes made by the Italian participants are shown. As it is seen in the samples (8a), (9a) and (10a), the Italian participants formed the English compounds with a head-initial position just as it is in Italian (their L1). For instance, it is seen that the picture given for the item 20 illustrates *a song sung by frogs*, the Italian participants gave the answer *\*song frog* with the influence of Italian (L1) structure in which the head precedes the modifier of the nominal compound (the Italian equivalence *canto della rane* ‘song of frog’). Even though the participants did not choose to express the meaning in a noun phrase with *of* in English, which would be closer to how it is formed in Italian, the effect of the L1 on the form of nominal compounds is clearly seen in the word order mistakes of the Italian participants.

In the Turkish group, the effect of the L1 form on the production of L2 compounding is observed on a positive way. It is worthy of consideration that the only word order mistake in the Turkish group is on the same item (*item 1*), and out of 40 participants, 39 made the same mistake. The item is shown in Figure 3 below.

### Figure 3

*Item 1 in PET*



1. ....

Item 1: candy apple

11a. \*apple candy

11b. elma şeker-i

‘apple candy-CM’

The example of item 1, *candy apple*, is an important indicator of the L1 effect on L2 compounding. Since the constituent order of an NNC is similar in both Turkish and English in the most cases, no word-order related mistakes are observed in the Turkish group aside from “candy apple”, which is a lexicalized noun-noun compound with an exceptional head-initial position in English. As it is seen in (11a), Turkish participants (39 out of 40) named the picture (item 1) as (11b) \**apple candy* like its Turkish equivalent in which the modifier *elma* ‘apple’ precedes the head *şeker-i* (candy-CM). These findings show that the Turkish participants were advantageous in the rest of the noun-noun compounds in comparison to the Italian participants due to the similar constituent order of noun-noun compounds in Turkish and English.

#### 4.1.2 Impact of L2 knowledge

The other mistakes in the category of incorrect use of GEN suffix and *of* Phrase is examined under the title of L2 knowledge. It is detected that the reason which leads participants to choose to use these structures to express a NNC and produce an incorrect structure in the target language English stems from the fact that the participants have not acquired these two target structures in their L2 yet. Sample incorrect uses of GEN suffix and *of* Phrase are illustrated below:

**Table 5**

*Sample mistakes on GEN suffix and of Phrase*

<b>Incorrect use of GEN suffix (Turkish &amp; Italian)</b>	<b>Incorrect use of -of Phrase (Turkish)</b>
*bird's doctor	*fork of watermelon
*heart's key	*cookie of pineapple
*apple's factory	*hat of butterfly
*bridge's police	*pajamas of strawberry
*skirt's wardrobe	

As it is seen in the table above, both Turkish and Italian groups produced some common mistakes in the category of usage of GEN suffix. The sample mistakes on GEN suffix given above were all produced to name the concepts that illustrate a novel NNC which does not exist in the target language English either. In other words, there were no lexicalized compounds that the participants needed to remember. So, the participants had only the meaning of the concept given by the picture and their knowledge of the L2 grammar rules while naming the concepts. In this case, expecting the learner to depend on his/her L1 is common. However, the findings here show that L1 is not the only factor which influences the L2 compounding process on a form basis.

Item 23: bird doctor (concept illustrated on the picture)

(12) bird's doctor (answer produced by the participants)

(12a) kuş	doctor –u	(12b) veterinario	per	uccelli
'bird	doctor-CM'	'veterinarian	for	bird'

In sample (12a), it is seen that for the concept that illustrates ‘a doctor specialized in the treatment of birds’, Turkish participants used GEN suffix and produces *bird’s doctor* while building a NNC like *kuş doktor-u* (bird doctor) is also productive and more common in their L1 (Turkish). Similarly, sample (12b) shows that the Italian participants produced the same mistake instead of a prepositional phrase like *veterinarian for bird*, which would be closer to their L1 syntactically and morphologically. These findings point out that the leading factor on this mistake must be the lack of L2 knowledge of a specific structure in L2 English. The mistakes on the use of *-of* Phrase produced by the Turkish participants also confirm the findings mentioned above.

Item 50: watermelon fork (concept illustrated on the picture)

(13) fork of watermelon (answer produced by the participants)

(13a) karpuz                      çatal-ı  
 watermelon      fork-CM

‘a fork used only for eating watermelons’

It is seen above that the participants produce the noun phrase with an *of* phrase, *fork of watermelon*, for the picture which illustrates ‘a fork that is specially used to eat watermelons’ instead of a NNC like *watermelon fork*, which is more similar to its Turkish equivalent (13a) *karpuz çatal-ı*. These findings also indicate that L1 must not be the only factor in the process of L2 compounding. Also, these findings could be the indicator of the effect of semantics. Since the meaning of *GEN suffix* (*'s*) and *of* are the same in Turkish, the Turkish participants choose either of them without paying attention to the usage difference between these two structures in English grammar because they basically express the same meaning when they are used.

### 4.1.3 Impact of Real-world Knowledge on NNC Production

With the aim of testing the impact of the factor real-world knowledge schemas on the L2 nominal compounding process, as predicted in Hypothesis 2, two items (10 and 31) consisting of novel compounds with a rare semantic relationship between their complements are placed in the PET. The answers produced to express these two items are analyzed and categorized into two main groups. The first category includes the answers that do not express the meaning of the concept given on the picture (item 10 and 31), but defines another concept with a similar meaning that is already existent in the real world. The second category consists of the questions for which the participants did not produce any answers and left blank. These categories and the frequencies for each group are shown in Table 6 below:

**Table 6**

*Frequencies of the categories for the real – world knowledge analysis*

	Existent concept		Blank answer	
	Item 10	Item 31	Item 10	Item 31
English	80%	70%	10%	20%
Turkish	68.7%	70.8%	11.2%	14.5%
Italian	72.4%	69.7%	20.3%	17.6%

As the frequency proportions show in Table 6, the participants of all the three groups (TR: 68.7%, IT: 72.4%, ENG: 80%) mostly produced the name of a similar concept that already exists and is common in the real world instead of the given concept or did not produced any answers at all. It is noteworthy that all groups (TR, ITA, ENG) chose either to use another concept that exist in their real world schemas or leave the item empty while they

successfully produce answers for the rest of the questions in PET. For the category of *Existent concepts*, some sample answers produced by the participants are given below.

**Table 7**

*Sample answers produced for item 10 and item 31*

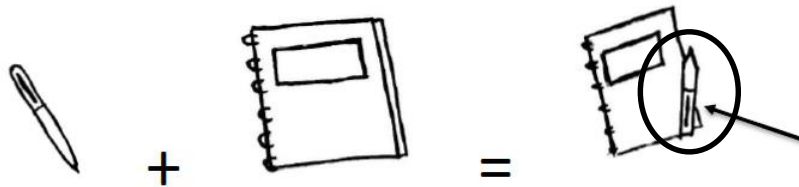
	<b>Item 10</b> <b>(‘notebook pen’)</b>	<b>Item 31</b> <b>(‘table chair’)</b>
<b>English</b>	*notebook	*dining set *dining chair *kitchenette set *dining table
<b>Turkish</b>	*booklet *notebook and pen *writing notebook *scratch pad	*dining table *sitting table *chair and table *dinner table
<b>Italian</b>	*notebook and pen *pencil on book *homework *block note	*chair and table *table with chairs *dining table

As table 7 shows, for the item 10 that illustrates a concept that is ‘a kind of pen designed to be used only to write on the notebooks’, all the three groups’ answers converge on the similar concepts like ‘notebook.’ In the case of item 31 which represents ‘chairs designed specifically to be used together with a table’, the participants of all the three groups produced similar concepts like ‘dining table.’ This finding could be interpreted as the indicator of the real- world knowledge. When the participants encounter with a novel NNC, they first check their schemas to compare it with the conventionalized ones in their mind. If they fail to find one, they utilize contextual clues for help. In this case, the participants cannot use the context since the pictures are presented in a decontextualized way. Thus, they move

on the last step and try to adapt the schemas they already have or build a new schema. For instance, in the case of item 10, it is not impossible to create a compound as *notebook pen* semantically. Considering the semantic properties of *notebook* and *pen*, the semantic relationship *purpose* could be created between the constituents, as in a *pen for notebooks*. However, a concept like this is not common in the real world even if it is semantically possible to be created, which could have led participants to choose another concept which is frequent in their real-world and exist in their schemas like *notebook* or *dining table* in the case of item 31. To have a deeper understanding of the situation, the pictures used for item 10 and item 31 are shown below in Figure 4.

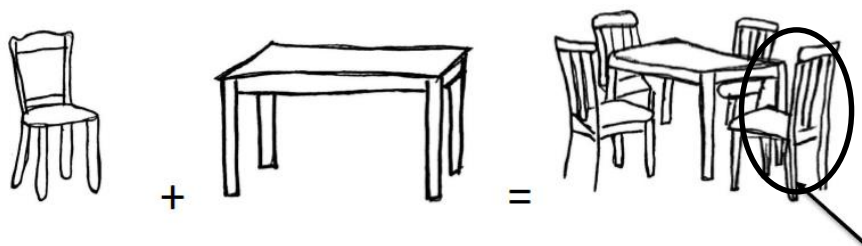
**Figure 4**

*Item 10 in PET*



10. ....

*Item 31 in PET*



31. ....

Considering the findings above, it is seen that L2 learners depend on their real-world knowledge (schemas) upon encountering a novel NNC which is strange or rare in the real world. The learners choose the common and existent concept in his/her schemas to refer instead of creating a new one for the given concept or prefer not to produce any answers at all even when it is grammatically and semantically possible to form these structures in both L1 and the target language.

#### 4.2 Results of Grammaticality Judgement Test

To augment the results of the picture elicitation task, Hypothesis 1 and 2 were tested again through the grammaticality judgement test. The pattern preferences to express a novel concept and the reasons behind these preferences were investigated across the groups through the definitions given for the selected novel concepts and the options in the form of noun-noun compound, possessive phrase, and noun phrase with *of*. The participants were allowed to use the same score (10-5-0) more than once if they needed in order to be able to gather data about whether they choose two or maybe all the three structures equally. The options given for the definitions were presented in a decontextualized form in order to prevent the effect of the context and lead participants to focus on only the meaning of the novel concept given in the GJ test. The results of the native group are presented to provide a reference for the target language rather than a comparison among the groups.

**Table 8**

*Frequencies of the scores given for the options*

	Turkish			Italian			English		
	10	5	0	10	5	0	10	5	0
<b>Noun-Noun Compound</b>	18,40	7,84	7,42	17,92	11,35	6,22	21,27	6,88	6,23

<b>Possessive Phrase</b>	15,78	9,06	8,24	11,47	11,44	7,80	13,60	9,28	10,08
<b>Noun Phrase with -of</b>	13,67	10,24	10,30	5,03	12,43	16,30	3,84	9,28	19,52

\*10: *Grammatically correct*

\*5: *Not sure*

\*0: *Ungrammatical*

As it is seen in Table 8, the results of the grammaticality judgement test support the results of the picture elicitation task. The participants in all the three groups marked NNCs as 10 points with the biggest proportion (TR: 18,40% IT: 17,92 ENG: 21,27), which means that all the groups regardless of their L1 and community consider NNCs as grammatically correct for the definitions of novel concepts just as the results in the picture elicitation task. Regarding the other two categories, it is seen that all the groups accept the possessive phrases as the second most grammatical option, and the noun phrases with *of* are considered ungrammatical across all groups.

The English group as the native speakers accept NNCs as the most grammatical option as expected since, in the test, all the definitions define a novel concept which is expressed in the compound form in English. However, the results also show that the native speakers consider using possessive phrase for the given novel concepts as more grammatical than the noun phrases with *of*.

The Turkish group, out of 3542 answers given, accept NNCs as the most grammatical form with the proportion of 18,40, which is followed by possessive phrase (15,78%) and noun phrases with *of* (13,67%) successively. Rather than the L1 effect, these findings point out the lack of L2 knowledge on these two structures (PossP and ofNP), which are generally used depending on the animate/inanimate feature of the nouns. To elaborate this case, a sample is presented below.

Q4: “One of the body parts of a bird that is used for flying”

(14a) bird’s	wing
(14b) kuş-un	kanad-ı
bird-GEN	wing-POSS’
(15a) wing of the bird	
(15b) kuş-un	kanad-ı
bird-GEN	wing-POSS

Considering that there is only one structure, possessive phrase, in Turkish as the counterpart of the English possessive phrases and NPs with *of* phrases, as in *kuş-un kanad-ı* ‘bird’s wing’, it would be expected to see a big difference between the proportions of PossP (15.78%) and ofNP structures (13,67) if L1 effect was the reason behind these results. However, the findings reveal that the factor that affects the process is that the Turkish participants have not yet acquired the animate/inanimate difference between the GEN suffix and *of* which shows that L1 form is not the only factor in the English nominal compounding process.

Analyzing the results of the Italian group, similar findings are observed. Out of 3576 answers given in the Italian group, it is seen that the Italian participants accept NNCs as the most grammatical form with the proportion of 17,92 %, which is followed by possessive phrases (11,47%) and *of* structures (5,03%). Similar to the findings of the Turkish group, the results point out the lack of L2 knowledge as the reason behind these percentages. A sample is presented below to exemplify this finding.

Q10: “an official document that gives you permission to date

someone or to be someone’s lover”

(16a) lover license

(16b) lover’s license

(16c) license of lovers

(17a) licenza di/per amanti

license of/for lovers

As it is seen in example (17a), the concept defined in the Question 10 is expressed with an *of* structure or a prepositional phrase in Italian: *licenza di/per amanti*, which is very similar to noun phrases with *of* in English (16c) as shown above. However, the results show that noun phrases with *of* is the structure that the Italian participants accept as the least grammatical (5.03%) and the most ungrammatical with the proportion of 16.30%, which contradicts the claim of the L1 form as the only factor in the L2 compounding process.

Another explanation for the Italian participants to choose ofNPs as the least grammatical structure even though this structure is more common in Italian (L1) could be the characteristics of the NNCs in English. Since NNCs are structurally more simple (e.g. no affixation like PossP and ofNP) and consequently semantically more simple and clearer, the language learners could choose them over other similar structures until they completely learn these forms and their differences in L2.

### 4.3 Results of Interpretation Task

The interpretation task is designed to test the schema factor in the L2 nominal compounding process as hypothesized in Hypothesis 2. As mentioned before, schemas are

investigated under two titles as “real-world knowledge” and “culture” in order to examine the effect of each phenomenon separately and more thoroughly. To examine the effect of culture and real-world knowledge in the interpretation of L2 nominal compounds, the items targeting culture and real-world knowledge were analyzed separately. Due to the small sample size of the English group, inferential statistics were not performed and the results are presented in the form of frequencies across all the three groups of the study.

#### **4.3.1 Impact of culture on NNC Interpretation**

To investigate the effect of the culture, in other words “shared cognitive schemas” as Strandell (2017) expresses, on the NNC interpretation, the answers given for the items targeting a concept specific to each culture are analyzed. The participants’ interpretations were coded as *original meaning* that signify the answers which explain the given culture-specific concepts correctly, and as *deduction from the constituents of NNC* representing the answers produced by making deductions from the meanings of the components of noun-noun compounds. Unlike the other data collection tools, the results of the English group, as the representative of the English culture, are presented to be compared with the other groups. The frequencies for each category are shown across the groups in Table 9 below. Differently from other groups, one more category was observed in the Italian group. The Italian participants associated the culturally specific (Italian) target concept with another cultural concept (Italian) and the frequency for it is shown with the asterisk in the table.

**Table 9**

*Frequencies of the answers given for culture-specific concepts*

	Items specific to Turkish culture		Items specific to Italian culture		Items specific to English culture		
	Original Meaning	Deduction	Original Meaning	Deduction	Original Meaning	Deduction	*ACC
Turkish	99%	1%	0%	100%	48.57%	51.42%	-
Italian	27.50%	72.49%	88.96%	11.04%	40%	15%	*45%
English	76.19%	23.80%	21.42%	78.57%	100%	0%	-

\*ACC: Association with another cultural concept

The results shown in the Table 9 confirm the crucial role of the culture in the NNC interpretation process. As it is expected, all the groups display the highest percentages with the items that represent the concepts specific to their native culture (TR: 99%, ITA: 88.96%, ENG: 100%) even if these concepts were presented in the form of a novel L2 compound produced specifically for the purpose of the present study, which might complicate the interpretation process. That is, the participants still used their L1 cultural schemas even when the cultural concept is presented in a form which does not exist in L2. For example, there is no such a compound or concept as *guest slippers* in English, yet most Turkish participants managed to understand the meaning of it, which supports the idea that L1 cultural schemas are strongly active in the interpretation process of a word in L2.

When the lowest percentages are considered, it is seen that Turkish (0%) and English (21.42%) groups failed to interpret the original meaning of the concepts specific to the Italian culture, and the Italian group interpreted the concepts specific to the Turkish culture with the lowest proportion (27.50%), which led all the groups to make deductions from the meanings

of the units of the noun-noun compound. The deductions made by the participants for the concepts are discussed below.

(18a) *Guest slippers*: slippers kept in Turkish houses for the guests only

(18b) Participants' interpretation: 'a kind of slippers used by/for guests'

(19a) *Groom coffee*: A cup of coffee made with salt and served to the groom to test his suitability as a husband (in Turkish culture)

(19b) Participants' interpretations:

'a kind of coffee drunk by only groom'

'a kind of coffee made by the wife to her husband after marriage'

Analyzing the deductions made for the culture-specific concepts, it is seen that most of the answers concentrate on the similar semantic relationships regardless of the nationality, which results from the fact that all participants, as a human being, must have the same schemas formed with the semantic features common to the concepts that each unit of the compound represents. To illustrate, both the Italian and the English group explained the meaning of (18a) *guest slippers* as 'a kind of slippers used by/for guests' considering the common features of the concept 'guest' as an animate being, a human, visiting a house and the concept 'slippers' as an inanimate product, 'a kind of shoe and being worn in home', which confirms that semantic meaning of the constituents and the related schemas play a crucial role in the interpretation process.

However, the findings also show that if there is a cultural schema about a concept, it could outweigh the cognitive schemas consisting of the common semantic features of the concept which is addressed as "real-world knowledge" in the present study. To illustrate, interpretations for the item (5) *Chimney socks* are discussed below.

(20a) *Chimney socks*: the stockings hung on the fireplace for Santa to leave gifts inside on the Christmas Eve. (present in both the English and the Italian culture)

(20b) Italian Participants' interpretation: 'socks hung on the fireplace for Befana on the 5<sup>th</sup> of January'

(20c) Italian & Turkish Participants' (deduction): 'a cloth used to clean the chimneys'

For the item (20a) *chimney socks*, both the Italian and the English participants were expected to produce interpretations that explain the original meaning of the concept because the tradition of hanging stockings on the fireplace before Christmas is very common in both communities. However, upon analyzing the results, it was found that only 40% of the Italian participants' interpretations include the original meaning of the concept while the percentage is 100% for the English participants. In the case of the Italian participants, it is seen that differing from the other groups, they mostly associated the target concept with another cultural concept specific to their region and %45 of the group interpreted *chimney socks* as 'socks hung on the fireplace for Befana on the 5<sup>th</sup> of January', which describes an Italian tradition called "La Befana" in which a witch (Befana) gives presents to children on Epiphany Eve (January 5).

These results indicate three important findings about the cultural schemas in the interpretation process of novel compounds. Firstly, it is seen that the participants tend to choose cultural schemas (if exists) over making deductions from the independent meanings of the compound units. This points out that cultural schemas automatize the recognition process and the units of Noun-Noun compounds as a whole activate the culture-specific concept for the members of this culture rather than trying to deduce the meaning from the units of the compound separately, just as in the example of *chimney socks*. All the English participants

directly interpreted it with the original meaning of the concept while some Turkish participants interpreted it as ‘a kind of cloth used to clean the chimneys’, which probably results from the attempts to deduce the meaning from the separate units of the compounds.

Secondly, these findings point out the importance of the community and environment of speakers in the interpretation process. Even though *Santa Claus* and *hanging stockings on the fireplace before Christmas* are common and native to both the Italian and the English culture, it is seen that in the case of the Italian participants, the given noun-noun compound activated another cultural schema which represents a local tradition celebrated in Italy instead of the target concept of *chimney socks*. This signifies how context dependent the schemas and consequently the interpretation of NNCs are. It is seen that the tradition “Le Befana” is more common in the community of the Italian participants, and consequently the repetition of it and exposure to this experience make this cultural schema superior in the activation process of the schemas related to Christmas.

Lastly, it is seen that English group interpreted the original meaning of the compounds specific to the Turkish culture (76.19%) more than the ones specific to the Italian culture (21.42). Considering that almost all English participants have been living in Turkey more than 5 years, these findings are an important indicator of the effect of the environment and the culture on our schemas and consequently on our interpretations. Remembering Hypothesis 2 and Hypothesis 1, the findings obtained from the interpretation task confirm the effect of cultural schemas on the interpretation process of L2 Noun-Noun Compounds and differentiate the groups from each other considering their culture-specific schemas.

### 4.3.2 Impact of Real-world knowledge on NNC Interpretation

To investigate the effect of cognitive schemas consisting of common features of a concept or entity (Strandell, 2017), or real-world knowledge as addressed in this study, 3 items including novel Noun-Noun Compounds that are semantically possible to be interpreted in two different ways and one novel Noun-Noun Compound that is semantically rare to be encountered were placed in the interpretation task. These target items were analyzed to detect the similarity and differences among the groups regarding their real-world knowledge in the interpretation process of the NNC. The semantic relationships created to interpret the meaning of the target novel compounds were coded by using content analysis and classified into groups utilizing Kunduracı's (2013) semantic relationship list. The semantic relationships detected for each item and their frequencies are shown for each group in Table 10 below.

**Table 10**

*Semantic Relationships and Frequencies*

	Dog Bone		Kangaroo Milk			Restaurant Fish	
	Belonging to	Purpose	Source	Product	Purpose	Location	Purpose
Turkish	5.71%	94.28%	14.28	74.28%	11.42%	34.28%	65.71%
Italian	9.52%	90.47%	16.66%	80.95%	2.38%	4.76%	95.23%
English	0%	100%	71.42%	28.57%	0%	71.42%	28.57%

The results in Table 10 shows that each group is consistent in itself in terms of the semantic relationships they use to interpret the meaning of the novel compounds while there are differences among the groups in some cases.

(21) dog bone

(21a) ‘a bone that a dog plays with’ (PURPOSE)

(21b) ‘bones in the body of a dog’ (BELONGING TO)

It is seen that all groups interpreted (21) ‘dog bone’ mostly as (21a) ‘a bone that a dog plays with’ (TR: 94.28%, ITA: 90.47%, ENG: 100%) while it could be also semantically possible to interpret the compound as the (21b) ‘bones in the body of a dog.’ This shows that regardless of the community, the novel compound ‘dog bone’ activates the schemas representing the same concept (21a) for all participants which could be the result of the frequency of this concept (21a), which must be higher than the latter (21b) in all three contexts the participants live.

(22) kangaroo milk

(22a) ‘milk that a mother kangaroo feeds their babies with’ (BELONGING TO)

(22b) ‘a kind of drink produced from kangaroo milk’ (SOURCE)

(22c) ‘a milk that a kangaroo drinks’ (PURPOSE OR BELONGING TO)

When the item (22) *kangaroo milk* was examined, it was seen that the Turkish and the Italian participants created the semantic relationship SOURCE between the units of the compound and interpreted it as (22b) ‘a kind of drink produced from kangaroo milk’ with the highest proportions (TR: 74.28%, ITA: 80.95%). However, the English group created the

semantic relationship BELONGING TO for the same NNC and interpreted it mostly as ‘milk which a mother kangaroo feeds their babies with’ (71.42%). Lastly, all the groups created the relationship the relationship PURPOSE (22c) with the lowest proportions. As it is seen in these results, the interpretations are consistent in each group but vary among different groups, which points out the high context dependency of schemas.

(23) restaurant fish

(23a) ‘a restaurant that only serves fish’ (PURPOSE)

(23b) ‘a kind of fish served in the restaurants only’ (LOCATION)

As the last item (23) *restaurant fish* is examined, it is seen that all the groups differ in terms of their interpretations. Italian group created PURPOSE relationship between the units of the compound and interpreted it as (23a) ‘a restaurant that only serves fish’ with a significantly big proportion (95.23%), which could be explained as the effect of L1 form on the interpretation process. Considering that NNCs are head-initial in Italian, the participants could have taken *restaurant* as the semantic head and interpreted it as a *fish restaurant* (23a). On the other hand, English participants created an LOCATION relationship between the units of the compound and interpreted the item as (23b) ‘a kind of fish served in the restaurants’ with the proportion of 71.42%, which could also be the result of head-final structure of the English NNCs.

However, Turkish participants used the relation of PURPOSE (23a) with the proportion of 65.71%, which is higher than the LOCATION relationship. If the effect of L1 form on the interpretation was the case, Turkish students would be expected to create the semantic relationship LOCATION more with the effect of head-final Turkish NNCs structures and consider *fish* as the semantic head of *restaurant fish*. However, it is seen that they consider *restaurant* as the semantic head and interpret the compound (23) as a kind of restaurant serving only fish.

This inconsistency on the L1 effect among the groups points out the individuality of schematization. Even though L1 compounding form could be effective in the process of interpretation for some participants (most Italian participants), Turkish participants' interpretations contradicts this explanation. In the case of Turkish participants, it is seen that the combination of two concepts *fish* and *restaurant* activated the concept of 'a restaurant that only serves fish' regardless of the order of the constituents. This could be the result of this concept's (23a) 'a restaurant that only serves fish' being more common than (23b) 'a kind of fish served in the restaurants only' in the participants' real-life context, consequently in their schemas<sup>9</sup>.

Another result pointing out the individuality of schemas is that all the groups are consistent as they create similar semantic relationships in their own groups. This shows that the environment is effective on the use of our 'real-world knowledge.' On the other hand, there are still interpretations different from the majority in each group even if the number of those is low, which points out the individuality in the use of real-world knowledge (schemas) during the interpretation process. To exemplify, 95.23% of Italian participants interpreted *restaurant fish* as (23a), but there still appear a minority of Italian participants (4.76%) that interpreted the compound as (23b).

Lastly, the interpretations produced for the compound *air mushroom*, which is semantically non-existent or rare to encounter, support the findings mentioned above. The interpretations across the groups and the numbers for each are shown in Table 11 below.

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<sup>9</sup> See Radden and Dirven (2007) for a detailed explanation of conceptual hierarchies that explains the saliency of some concepts over the others in the activation of schemas.

**Table 11**

*Interpretations for 'air mushroom' and the frequencies*

Turkish	Italian	English
<p><i>Place</i></p> <p>*a kind of mushroom that grows on the top of the mountains (17)</p> <p>*a kind of mushroom that grows in high areas (15)</p> <p>*a kind of mushroom grown in open-air areas (2)</p> <p><i>Metaphoric relation</i></p> <p>*a kind of parachute (2)</p> <p>*a cloud like a mushroom (3)</p> <p>*airbag system in the cars (1)</p>	<p><i>Place</i></p> <p>*a kind of mushroom grown in the air (21)</p> <p><i>Source</i></p> <p>*a kind of perfume /smell produced from mushroom (11)</p> <p><i>Identification</i></p> <p>*a kind of mushroom light like air (4)</p> <p><i>Metaphoric relation</i></p> <p>*hot air balloon (1)</p> <p>*flying mushrooms (3)</p>	<p><i>Identification</i></p> <p>*a kind of mushroom that is very light (2)</p> <p><i>Metaphoric relation</i></p> <p>*the shape of bubbles surfacing underwater (1)</p> <p>*a type of aircraft (1)</p> <p>*a cloud that looks like a mushroom (2)</p> <p>*a type of mushroom that puffs up with air (1)</p> <p>*a bubble (1)</p> <p>*mushroom-shaped cloud after an atomic bomb explosion (2)</p>

As it is seen in Table 11, the results confirm both the undeniable effect of the environment on the 'real-world knowledge' and the individuality of schemas (in this case of real-world knowledge). Considering the semantic properties of the concepts *air* like [SPACE ABOVE THE GROUND], [GAS], [FLYING] and *mushroom* like [FUNGUS], [ROUND TOP], [FOOD], it is expected for the participants to choose to connect the head *mushroom* with a PLACE relationship.

However, it is seen that even if the common semantic relationship is ‘place’, the interpretations are different among the groups. To illustrate, the Turkish participants specifically interpreted the *mushroom* as grown ‘on the top of the mountain’ or ‘in the high areas’ while the Italian participants interpreted it in a more unusual context and explained it as ‘a kind of mushroom grown in the air’, which points out the effect of the context schemas are learned. Even though the semantic properties guide participants, the specifications of the semantic relationship prove that our schemas (real-world knowledge) are context-dependent.

Another noteworthy finding on Table 11 is that some (11 out of 40) Italian participants interpreted *air mushroom* as ‘a kind of perfume produced from mushrooms.’ Considering that no Turkish or Italian participant produced an interpretation like this, this finding could be interpreted as the effect of L1 form. It is possible that Italian participants were influenced from the head-initial Italian NNC structures and considered *mushroom* as the head, which results in an interpretation as ‘a kind of perfume produced from mushrooms.’ However, there is always the possibility of the existence a ‘perfume with the name of mushroom/ with a bottle shaped like a mushroom or maybe even produced from mushrooms’ in the participants’ real-life context and schemas. A further investigation is needed like a post-interview with the participants to be certain.

In addition, it is seen that some participants in all the groups created completely different semantic relationships and made different interpretations from the majority of their group. For example, some Turkish participants interpreted *air mushroom* as ‘a kind of parachute’ or ‘the airbag system in the cars.’ Also, some Italian participants interpreted the compound as ‘a hot air balloon’ and with an unusual context as ‘flying mushrooms.’ And, the English participants interpreted the compound *air mushroom* as ‘a cloud that look like a mushroom, bubbles or mushroom-shaped cloud after an atomic explosion.’ These findings point out two important results. Firstly, they are a good indicator of another human cognitive

ability: *metaphor*. Language user is capable of associating one conceptual domain with another (Heyvaert, 2009) as in the examples of the association of *mushroom* (a kind of fungus) with a *hot air balloon*, *air-bag system in the cars* or *a mushroom-shaped cloud after an atomic bomb explosion*.

Secondly, these findings are a good indicator for the individuality of the schemas considering these participants are the minority in their groups. That is, L1 form or the common semantic properties of the concepts have an effect on the interpretation of the participants, which differentiates different group of L2 learners from each other and creates commonalities among the same groups with a same L1 and community.

However, at the same time, it is still seen that people are not completely bound by their environment in which they learn their schemas. And, each individual can experience the same concepts that exist or occur in the same context in different ways, which may result in different schemas even in the same communities.

All in all, our use of real-world knowledge is both environment-dependent till the point that it differentiates groups from each other regarding the majority and it is also individual considering those who make different interpretations from the majority. Revisiting the Hypothesis 1 & 2 of the present study, it is seen that the findings confirm that the groups differ in the interpretation process of the L2 Noun-Noun compounds and 'real-world knowledge' is a significant factor that affects the interpretation process according to the present study.

## CHAPTER 5

### SUMMARY AND CONCLUSIONS

#### 5.1 Concluding Remarks

The present study has investigated the factors that affect the production and the interpretation of L2 English Noun-Noun Compounds. It is argued that *L1 compounding structure* is influential in terms of the form in the NNC production of the L2 learners. At the comprehension level, the study approaches to the interpretation process from a Cognitive Linguistic perspective. Analyzing learners' interpretation from a schematic view, it is claimed that L2 learners' interpretation of L2 English NNCs is influenced by their cognitive schemas: as addressed in the study, the *real-world knowledge*. In addition to the real-world knowledge of the learners, the present study proposes *culture (cultural schemas)* as the third factor affecting the learning process of L2 English NNCs, specifically the interpretation process.

With the aim of determining the effect of the recently proposed factors, a picture elicitation task, a grammaticality judgement test and an interpretation task have been conducted in the groups of Turkish (L1), Italian (L1) and English native speakers. The results have been analyzed utilizing both qualitative and quantitative methods (Independent t-test, content analysis). In the light of results, the present study reveals important findings, as listed below.

Firstly, the findings of the present study support the undeniable effect of L1 compounding structure in the form of compounds. The results of PET clearly show that Italian participants made constituent order mistakes in their English NNC productions by

being affected by the head-initial form of NNCs in Italian, their L1, while almost no mistake on the constituent order of the NNCs was observed in the Turkish participants' answers as the result of the head-final form of Turkish NNCs (similar to L2 English). In addition to the proposed factors, the results revealed another important factor for the form-based production of L2 English NNCs. It is observed that not all mistakes produced by the participants are caused by their L1 form. Both Italian and Turkish participants produced mistakes on the use of the GEN suffix and the preposition *of*, which proves that the reason behind their mistakes must be the lack of L2 (formal) knowledge on the structures of possessive phrases and noun phrases with *-of* (section 4.1.2).

In terms of the effect of schemas on the production of NNCs, the findings show that the real-world knowledge has a considerable effect guiding participants to choose the common concept in their schemas while producing NNCs for the given concepts even when it is grammatically and semantically possible to form another one.

Another important finding the study reveals is the role the real-world knowledge and the cultural schemas play in the interpretation process of NNCs. The results of the Interpretation Task show that the effect of these two factors is significant in the interpretation process. It is observed that the participants heavily depend on their real-world knowledge and choose the concept that is common in their real-life context and schemas while trying to interpret novel NNCs. And, in the case of the existence of a cultural schema, it outweighs the real-world knowledge by being more salient in the schema activation process. Also, in some findings of the present study, the effect of L1 form is observed in the interpretation process. Most of the Italian participants interpreted the compound *restaurant fish* as 'kind of restaurant serves only fish' by considering the semantic head as *restaurant*, which might be the effect of Italian (L1) NNC form (head-initial). However, Turkish participants also mostly made the same interpretation as Italians, which contradicts the assumption of L1 effect since

the form of Turkish NNCs is head-final like English. Thus, further research is need to be certain considering the inconsistency on this issue among the groups because this could be result of the schemas common to the participants instead of the L1 effect. (see 4.3.2 for the detailed discussion).

All in all, the findings reveal that L2 learners of different speech communities differ from each other in the production and the interpretation of L2 English NNCs. In this regard, L1 compounding form, L2 formal knowledge on the target structures, the real-world knowledge and cultural schemas are effective from different aspects. The results also emphasize the individuality of the L2 language learning process pointing out the individuality of schemas each learner embodies. This final point, namely the individual factors in L2 compounding, can be investigated in detail in future research.

## **5.2 Implications for Teaching**

The findings of the study point out that making use of both a formal and a cognitive approach while teaching NNCs will be more effective considering the complementary roles of both approaches. The L1 form is clearly effective on the learning process, for which it is hard to find explanations with pure semantics and schemas in terms of every formal structure, as Taylor (2008) also underlines. On the other hand, a cognitive linguistic approach provides a meaningful explanation for the unpredictability of NNC interpretations by putting the learner's cognitive processes and units on the center and revealing the individual factors for each learner.

Taylor (2008) and Langacker (2008) also emphasize that a semantics-based approach like Cognitive Linguistics are pedagogically more suitable for the foreign language teaching context. A pedagogical grammar used in language learning and teaching contexts is different from a descriptively formal grammar that only provides formal linguistic facts of a language

(Dirven, 1985). A pedagogical grammar should aim to help the language learner develop a deeper understanding of the linguistic structures in the target language and fulfill the learning, Taylor (2008) also expresses. In the case of the teaching of Noun-Noun Compounds, a Cognitive Linguistics approach achieves this aim, as Taylor (2008, p.44) states. In this case, rather than teaching only forms and the lists of fixed semantic relationships between the constituents of Noun-Noun Compounds, which could still be confusing upon encountering novel and rare NNCs, teaching the fact that constituents are associated with each other in a way and guide students to pay attention to the contextual and cultural (if exists) contributions to meaning to interpret could be more effective.

In addition, the findings of the study suggest foreign language teachers to pay attention to the individual differences (e.g. the context they come from, culture, background knowledge) among their students when teaching word-formation processes like NNCs. The present study provides empirical results about the significant effect of schemas (real-world knowledge and cultural schemas) especially when the language learners have difficulty in comprehending the meaning of novel NNCs. In ELT, the role of schemas in L2 reading comprehension has been widely investigated and accepted (Zhao and Zhu, 2012; Grabe, 1986; Carrell, 1984, 1988; Carrell and Eisterhold, 1983), but the findings of the present study suggest paying attention to the effect of schemas in the teaching of formal structures like Noun-Noun Compounds, which can also be considered when teaching other processes in derivational morphology and word-formations.

Another implication the study provides based on empirical findings is the importance of the native culture of the language learners in the learning process. The facilitative role of involving the culture of the target language in the foreign language teaching is emphasized by a number of studies in the field of ELT (e.g. Holme, 2003; Kuang, 2007; Brown, 2007; Byram and Morgan, 1994). However, the findings of the present study call for paying also

attention to the native culture of the foreign language learner. Addressing the culture with a cognitive perspective, the study reveals that taking L1 culture into consideration could be an effective solution for the difficulty in the comprehension of the NNCs experienced by the L2 learners.

### **5.3 Limitations of the Study and Suggestions for Further Research**

The present study has some limitations that could be taken into consideration for further research. Firstly, this study focuses on only the endocentric compounds since they are more productive in English and it is aimed to narrow down the scope of the study in order to investigate the research questions more effectively and in a more detailed way. However, for further research, exocentric compounds and their learning process could be also examined and significant findings could be revealed for the field of SLA and ELT. Secondly, a think aloud protocol could be conducted following the interpretation task. In this way, the inconsistency between the groups about whether the L1 form or real-world knowledge is more effective on the interpretation process of compounds could be resolved.

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## APPENDICES

### Appendix A - Demographic Survey

Name:

Age:

Gender:

Mother tongue:

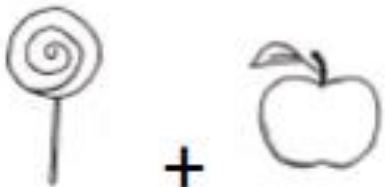

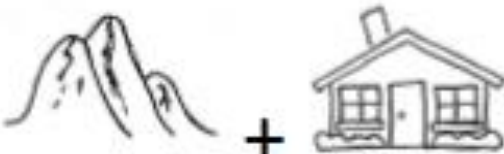

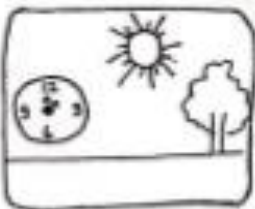

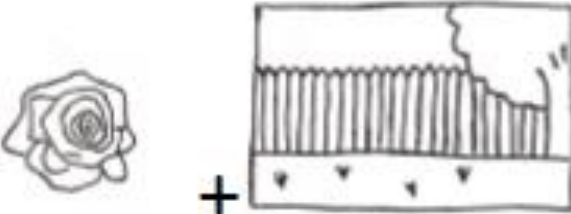

Other languages:

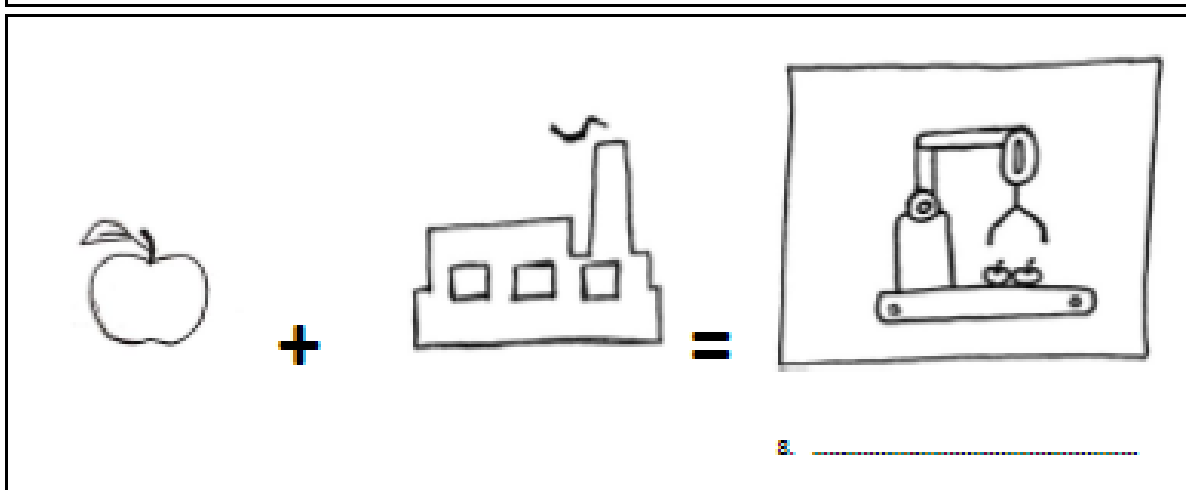
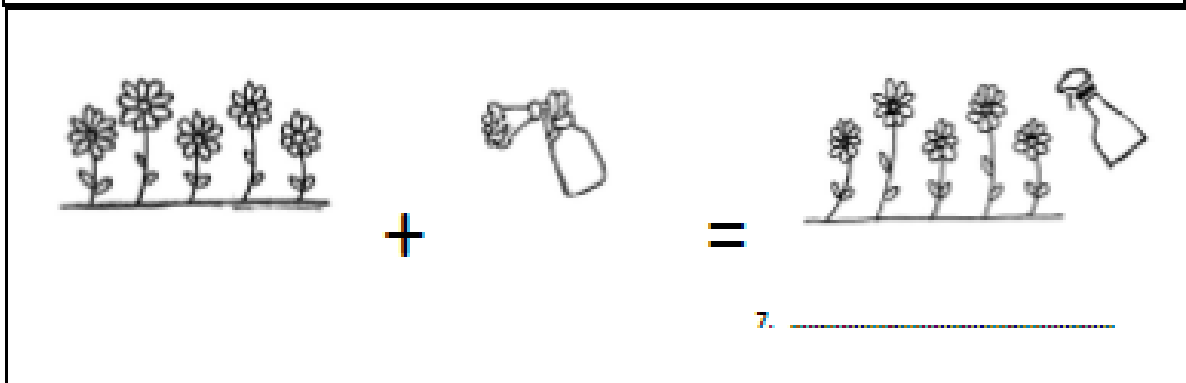
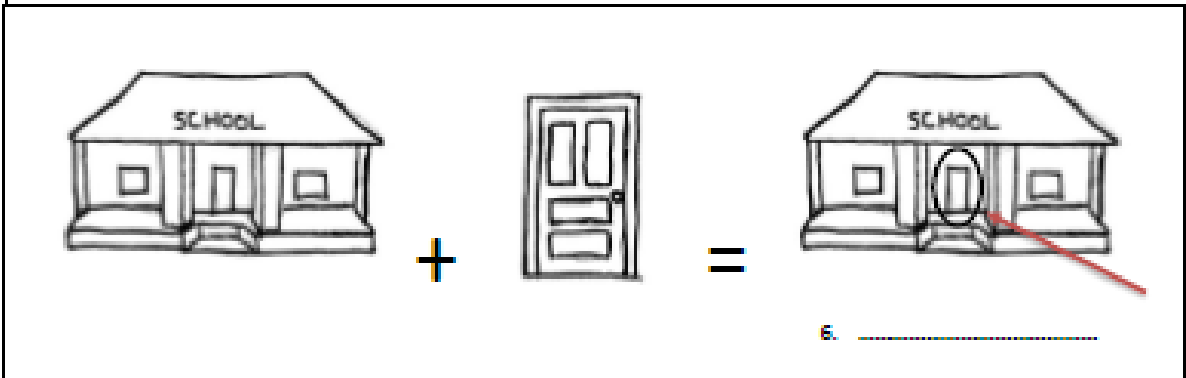
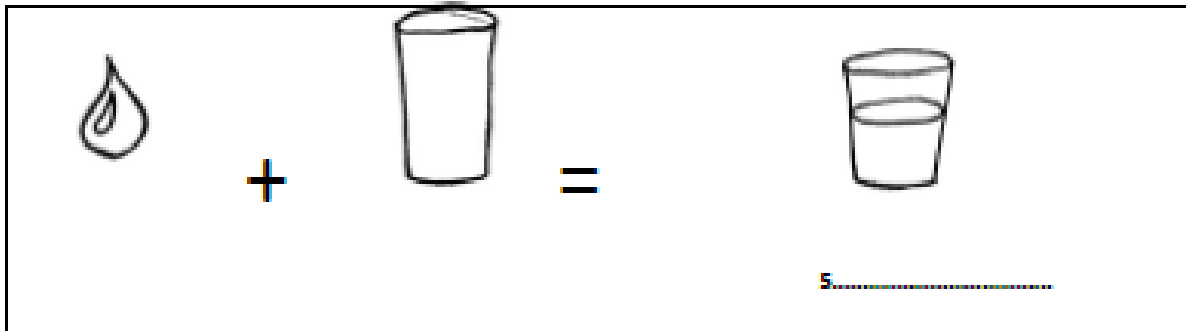
English level:

How long have you been learning English? :

## Appendix B – Picture Elicitation Task

Please look at the pictures and find a “**NAME**” for the **final picture** by **combining the two pictures** before the equals sign. Try to make your decision fast and do not spend too much time by creating the names. There is no “right or wrong” answer.

	 1. ....
	 2. ....
	 3. ....
	 4. ....





+



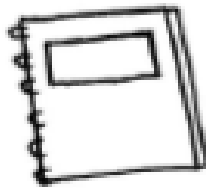
=



9. ....



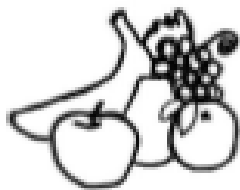
+



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10. ....



+



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11. ....



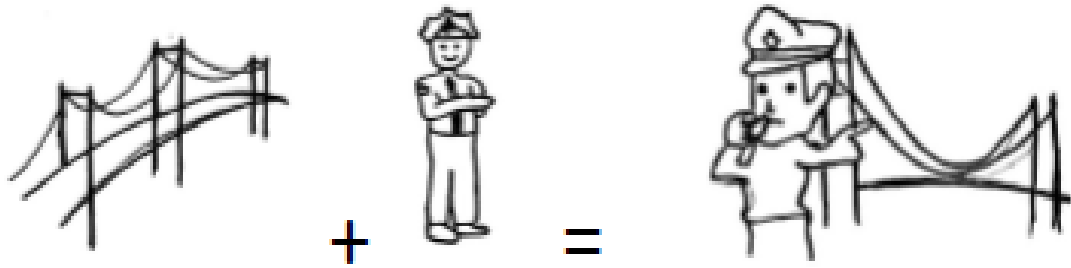
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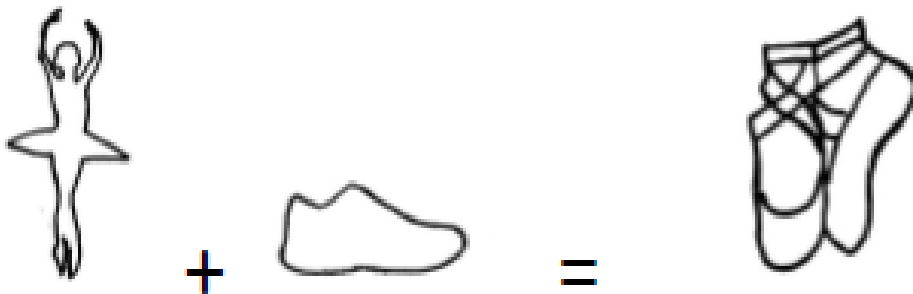
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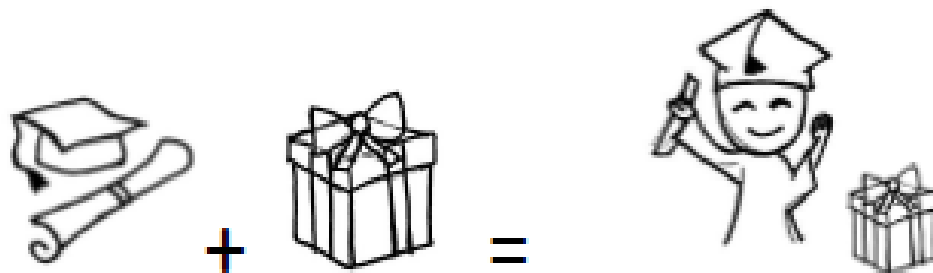
12. ....



13. ....



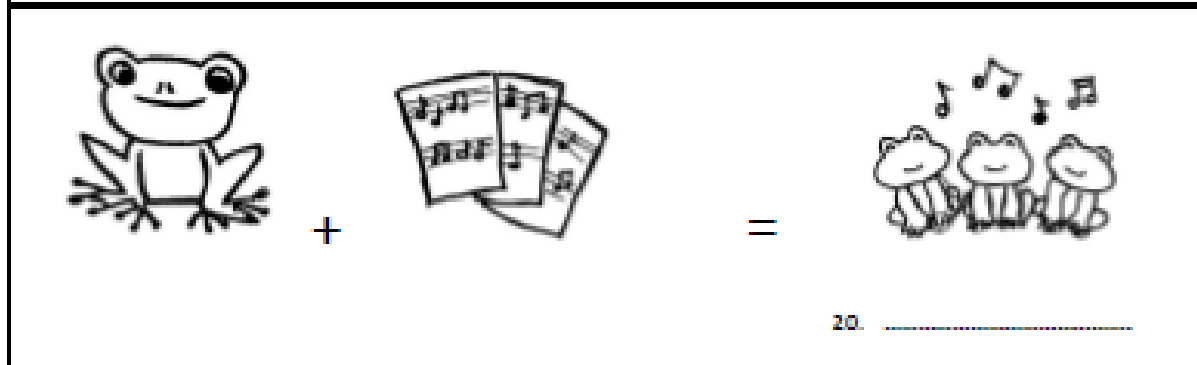
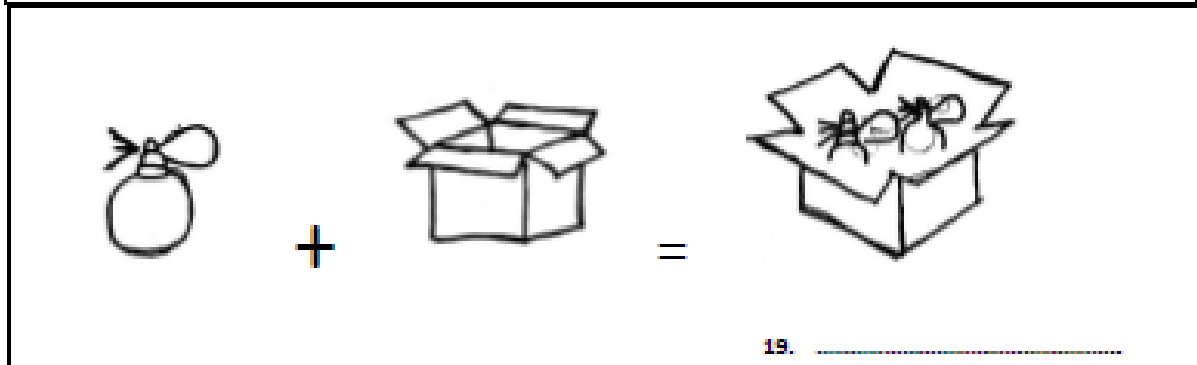
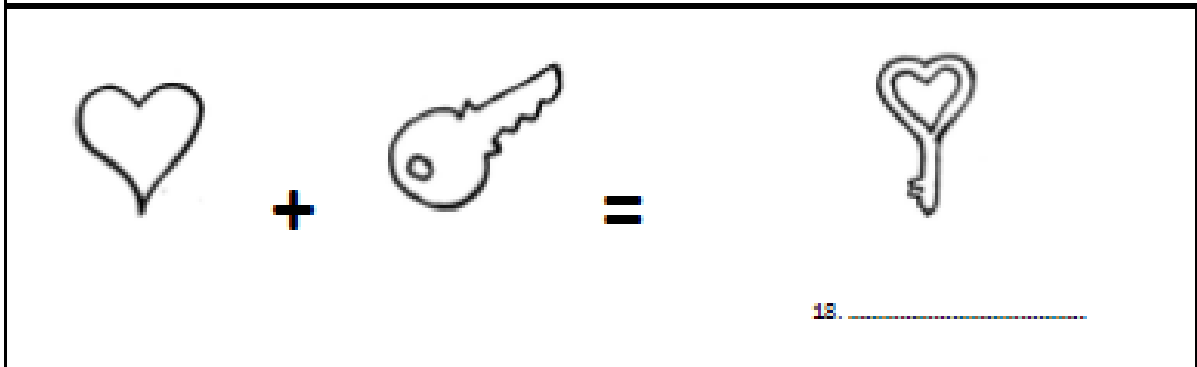
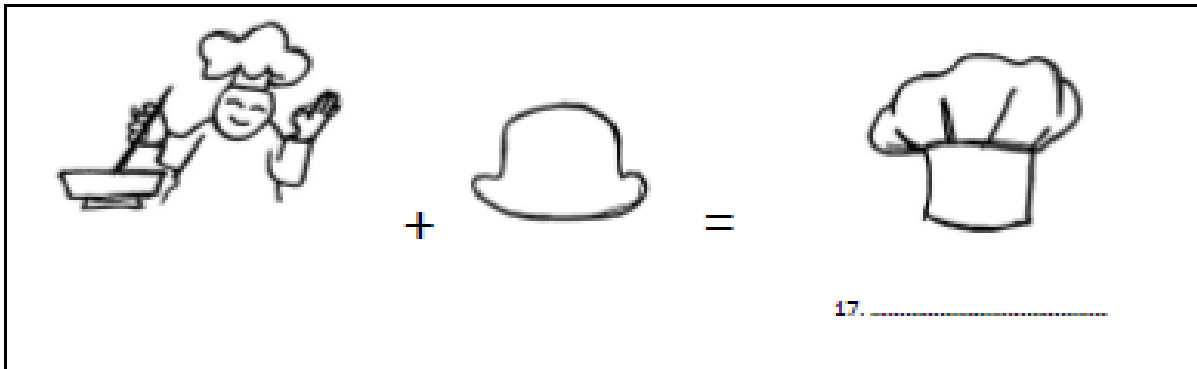
14. ....

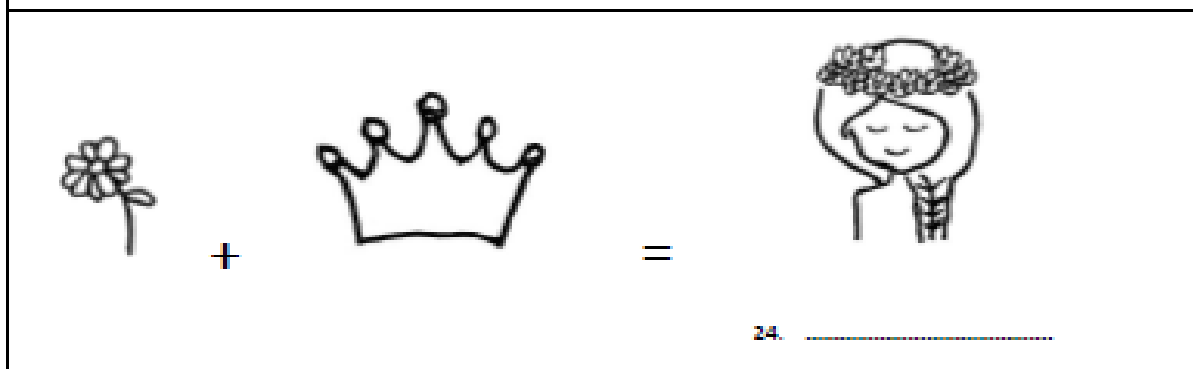
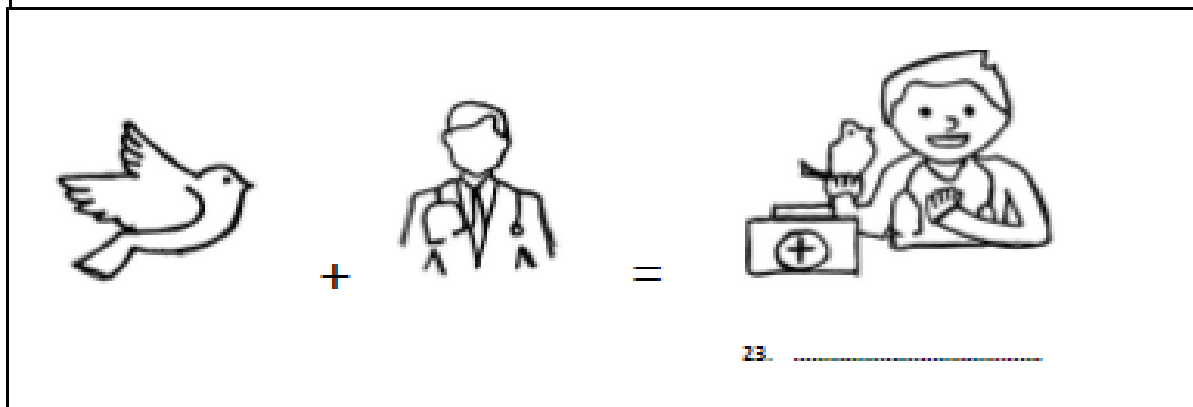
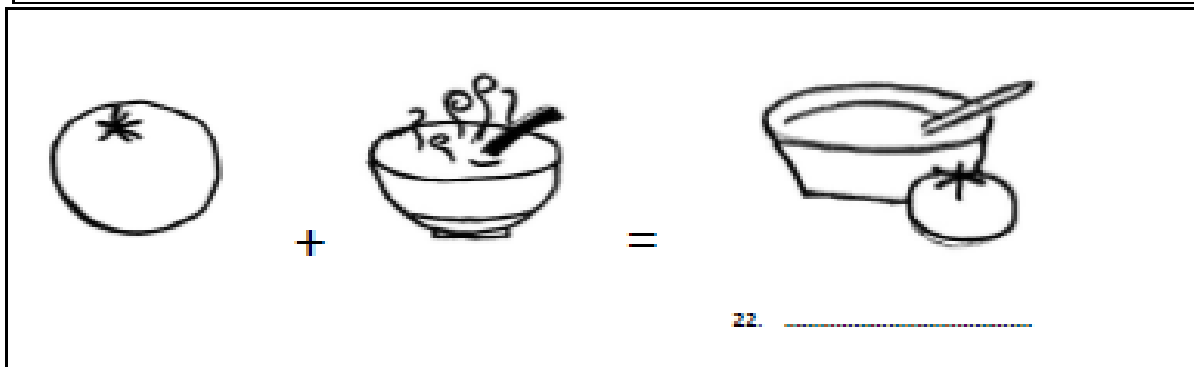
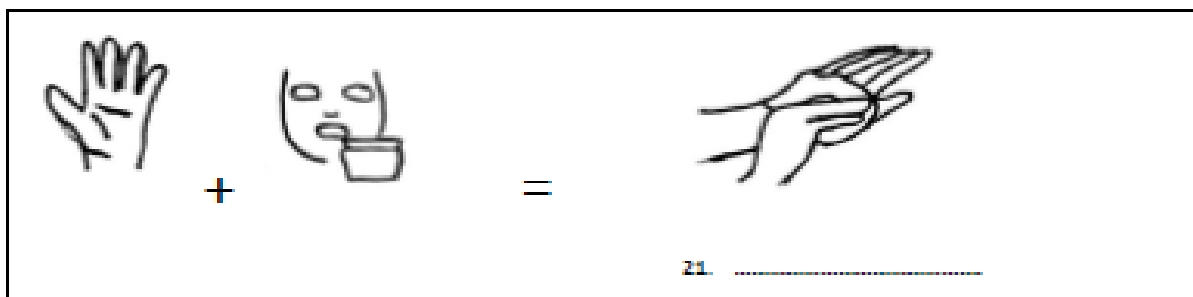


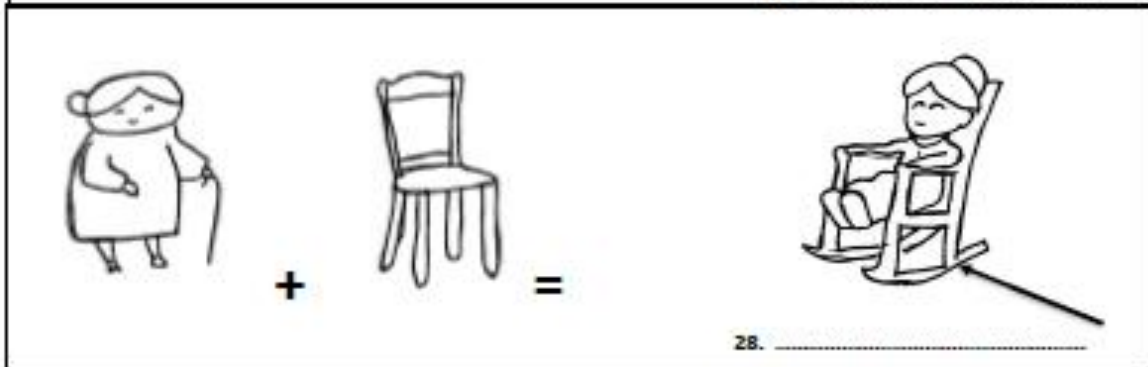
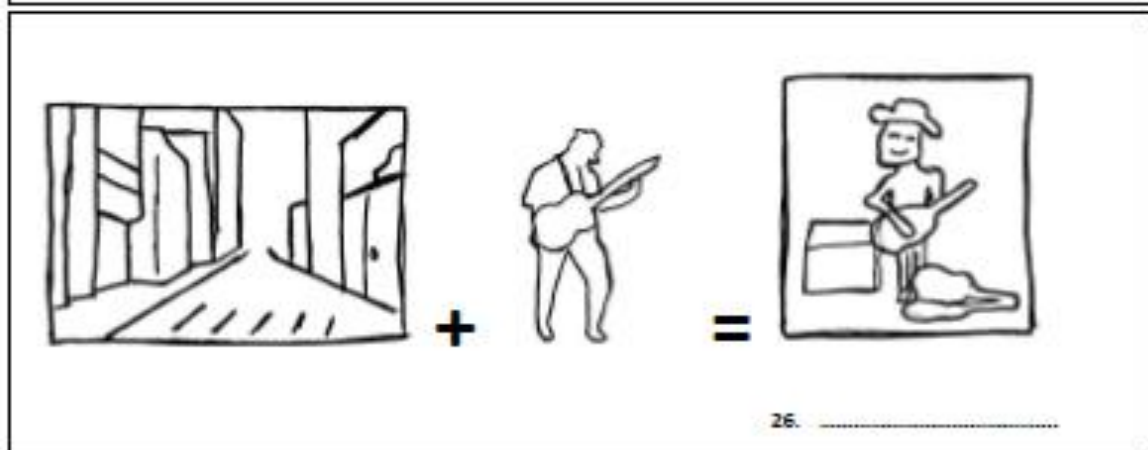
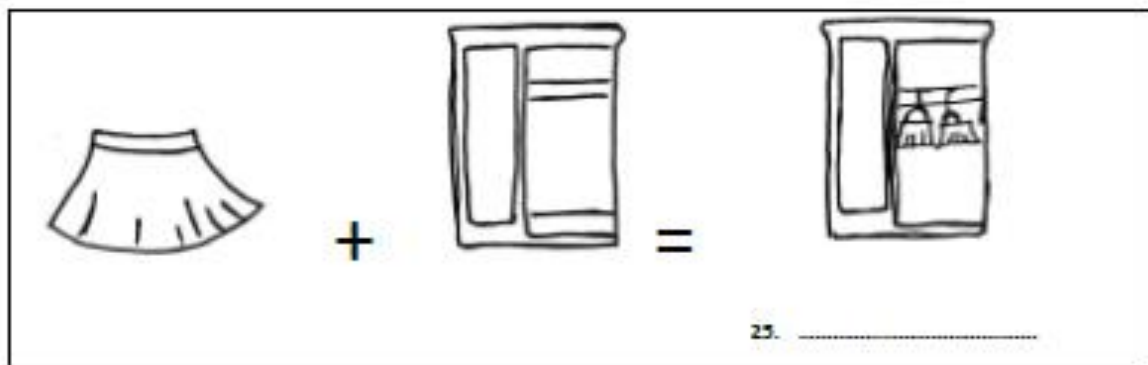
15. ....

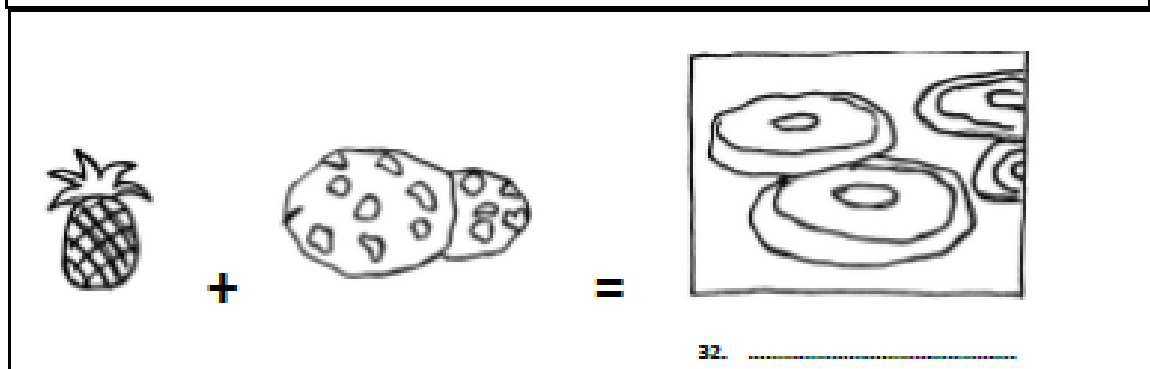
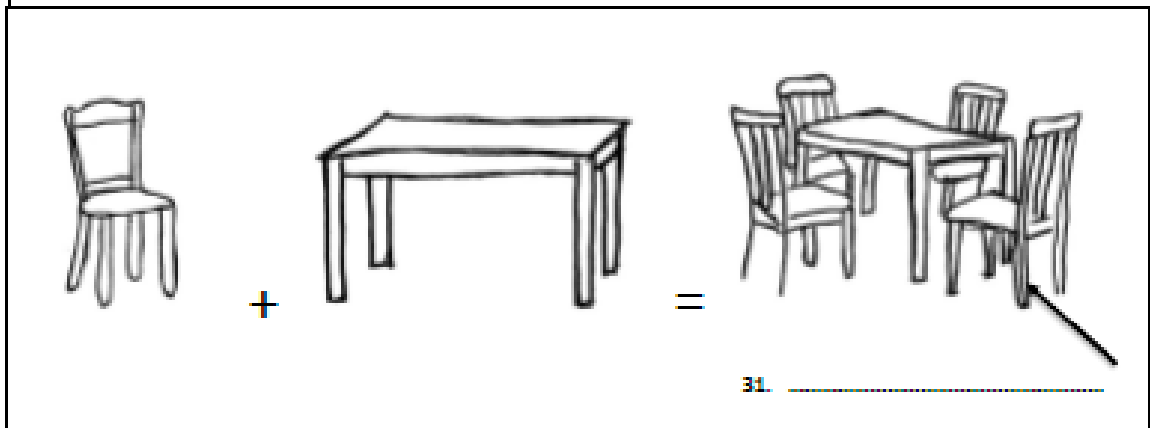
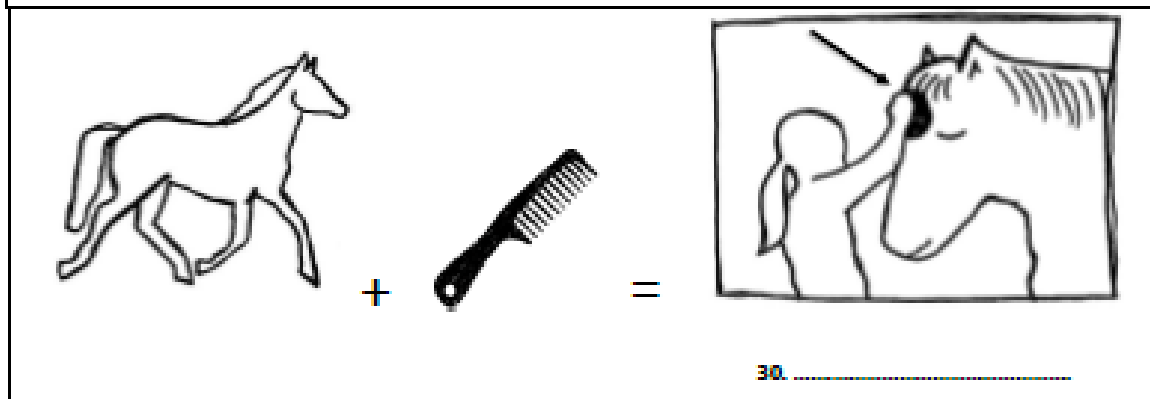
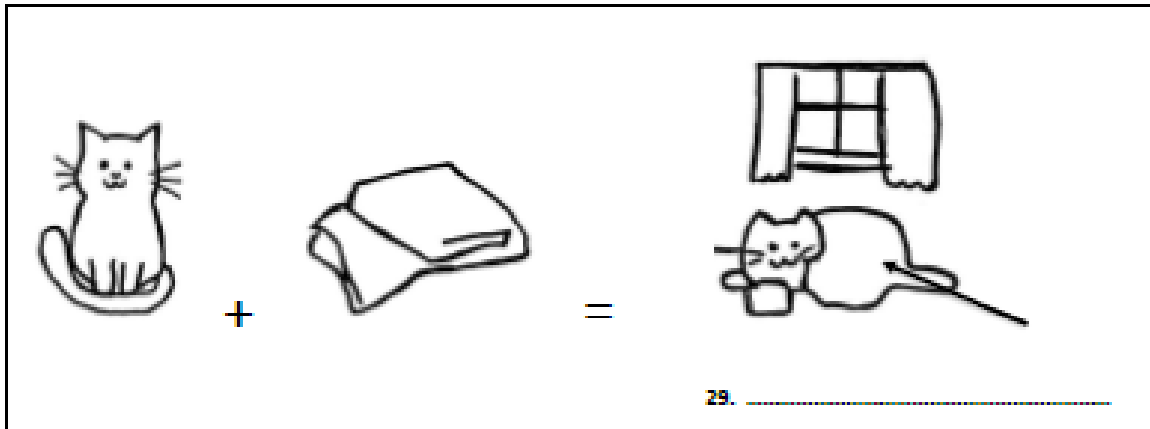


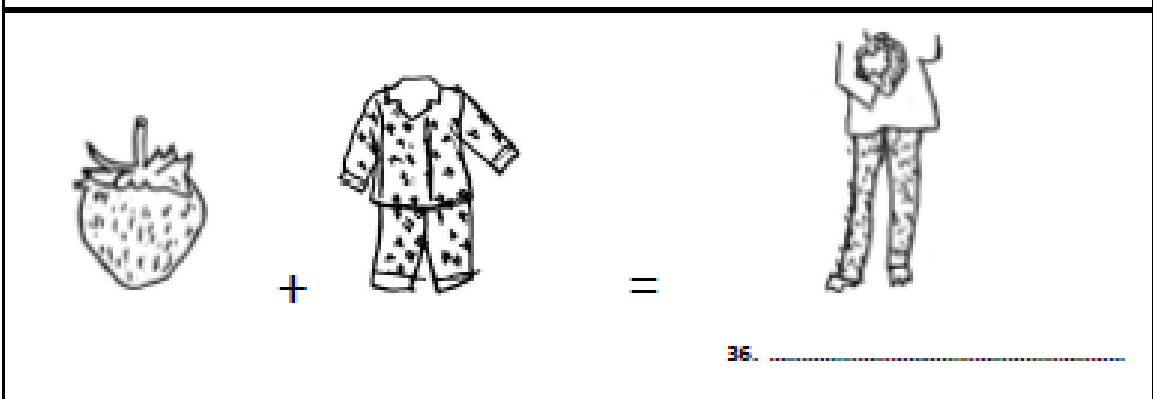
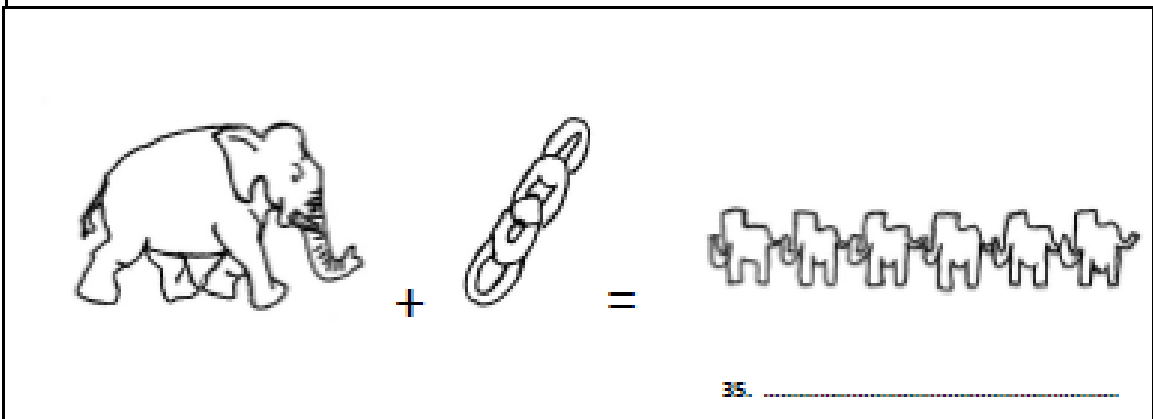
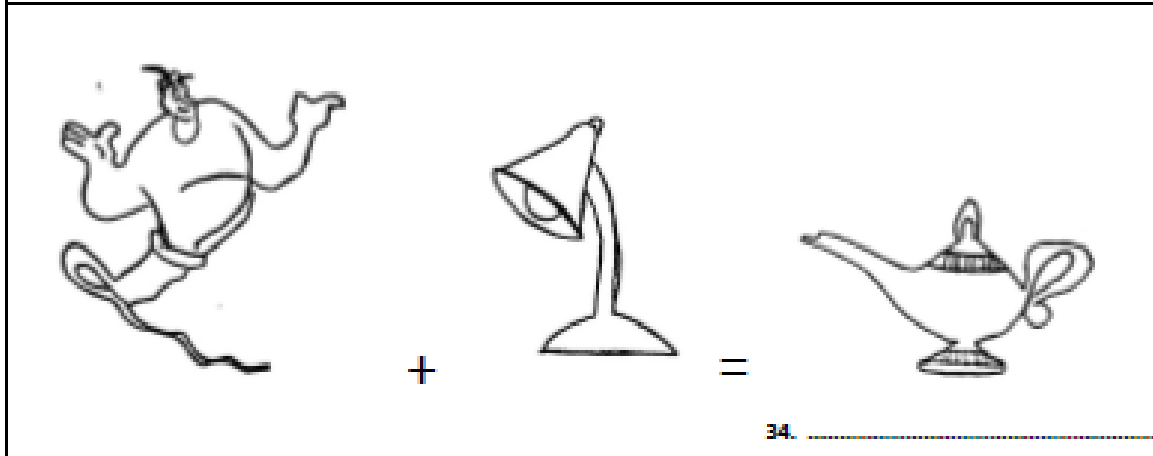
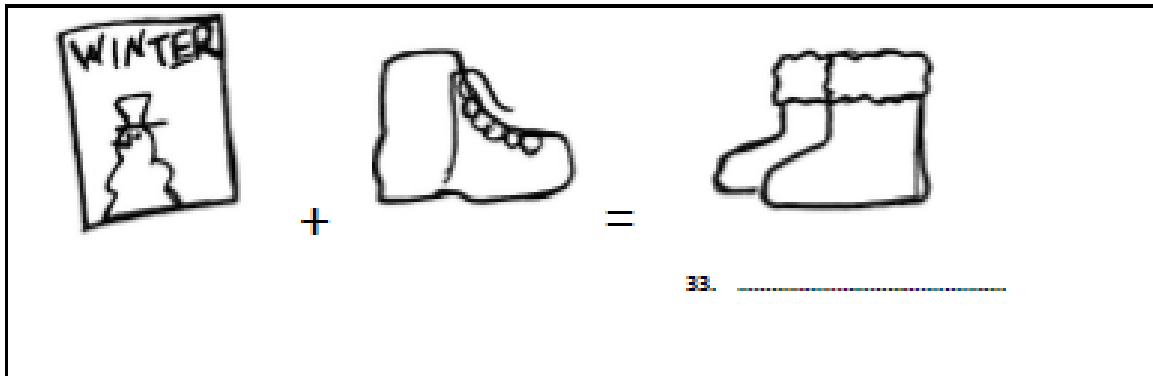
16. ....









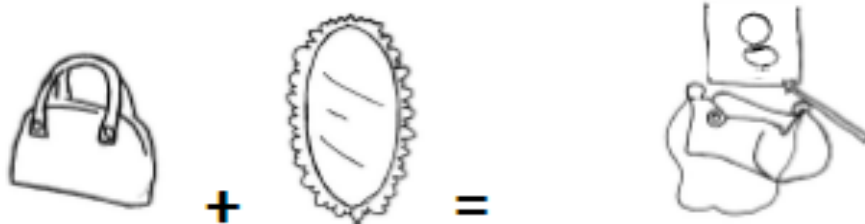




37. \_\_\_\_\_



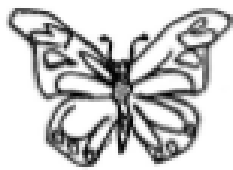
38. \_\_\_\_\_



39. \_\_\_\_\_



40. \_\_\_\_\_



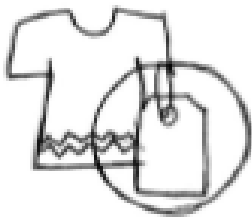
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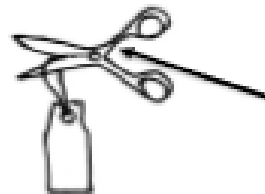
41. ....



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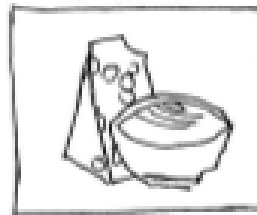
42. ....



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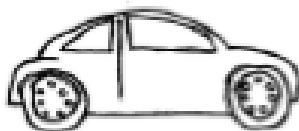
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43. ....



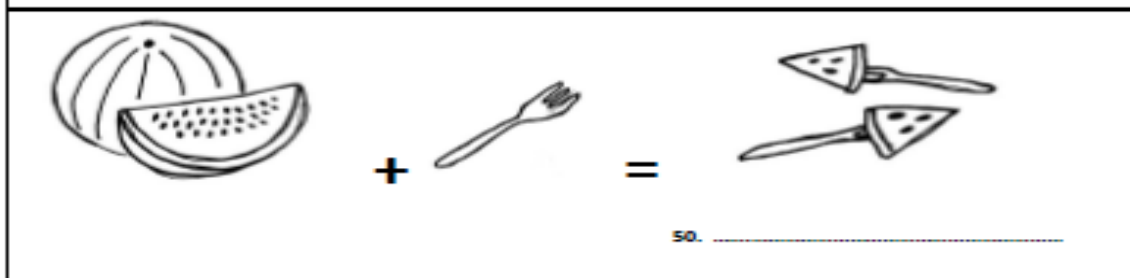
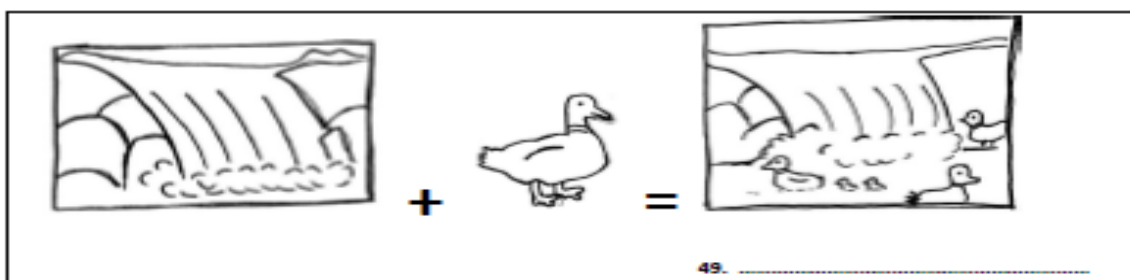
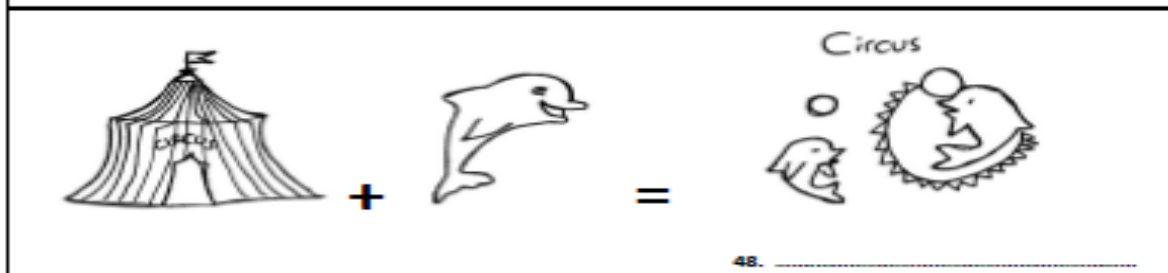
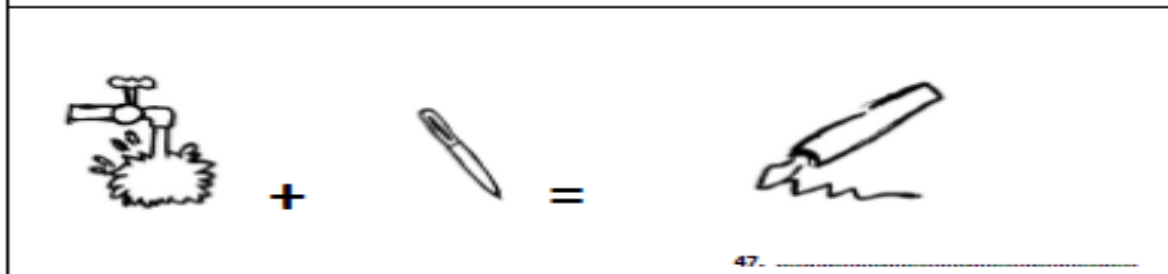
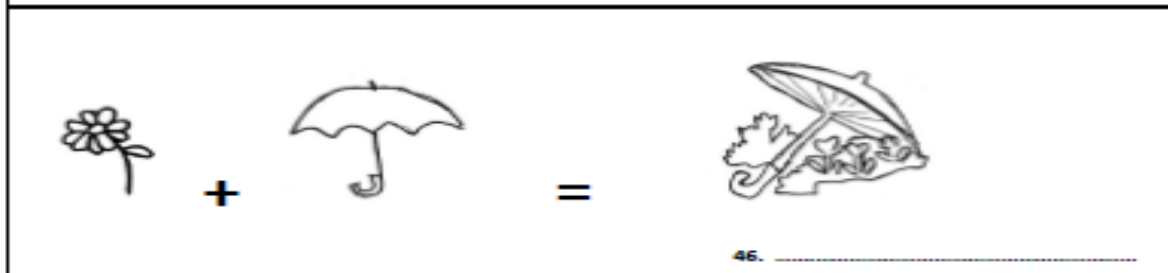
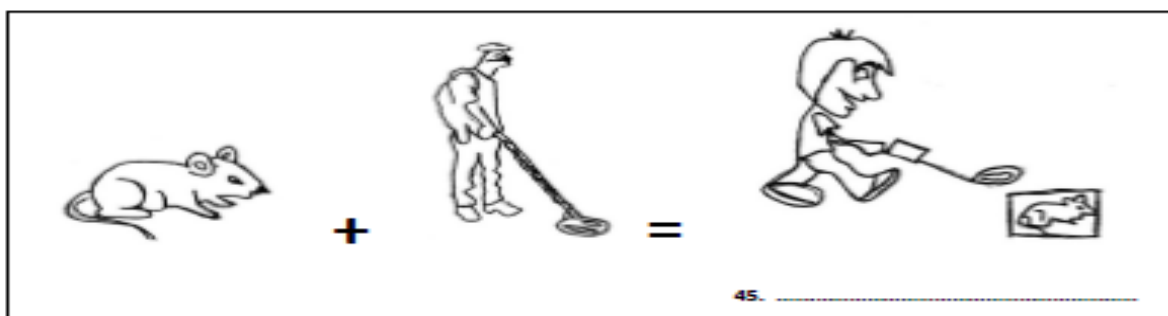
+



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44. ....



## Appendix C – Grammaticality Judgement Test

Below you see definitions and alternative answers created to define each definition.

Please read each definition and decide how grammatical each alternative is.

Depending on your grammaticality judgment, give a score for each alternative.

\*If you have any further suggestions for the given definition, you may add your suggestion in the blank row at the end of each table.

0: Ungrammatical. I would never use this form and when somebody uses it, I wouldn't accept it.

5: Not sure. It is not my favorite. I wouldn't use it, but I can say okay when I hear somebody using it.

10: Grammatically correct. I would both use it and accept it when I hear somebody using it.

### What would you call:

1. A card that you buy and use to pay for phone calls from a public and sometimes from a private telephone.

	10	5	0
a. Phone card			
b. Phone's card			
c. Card of phone			
d.			

2. A book for children.

	10	5	0
a. Children book			
b. Book of children			
c. Children's book			
d.			

3. A house for students to stay in.

	10	5	0
a. Student house			
b. Student's house			
c. House of students			
d.			

4. One of the body parts of a bird that uses for flying.

	10	5	0
a. Bird wing			
b. Bird's wing			
c. Wing of birds			
d.			

5. A person who sings, or whose job is singing at school events.

	10	5	0

a. School singer			
b. School's singer			
c. Singer of schools			
d.			

6. One of the three periods in the year during which most schools break up and no classes are held.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Summer term			
b. Summer's term			
c. Term of summer			
d.			

7. The feeling of liking your sister or caring about her.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Sister love			
b. Sister's love			
c. Love of sisters			
d.			

8. A place where animals that have been badly treated, or are lost or not wanted, can be cared for.

	<b>10</b>	<b>5</b>	<b>0</b>
a. animal shelter			
b. animal's shelter			
c. shelter of animals			
d.			

9. The day when a person officially graduates from university or high school.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Graduation day			
b. Graduation's day			
c. Day of graduation			
d.			

10. An official document that gives you permission to date someone or to be someone's lover.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Lover license			
b. Lover's license			
c. License of lovers			
d.			

11. The scientific study of the relationship between living things and their environment.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Ecology science			
b. Ecology's science			
c. Science of ecology			

d.			
----	--	--	--

12. The natural outer layer that covers a snake.

	10	5	0
a. Snake skin			
b. Snake's skin			
c. Skin of snakes			
d.			

13. An object for cats to play with.

	10	5	0
a. Cat toy			
b. Cat's toy			
c. Toy of cats			
d.			

14. An argument between friends.

	10	5	0
a. Friend fight			
b. Friend's fight			
c. Fight of friends			
d.			

15. The snow that falls during summer time.

	10	5	0
a. Summer snow			
b. Summer's snow			
c. Snow of summer			
d.			

16. A clever plan designed to trick students, set by their teachers.

	10	5	0
a. Student trap			
b. Student's trap			
c. Trap of students			
d.			

17. A promise made by a mother. Mothers usually use it to assure their child that the promise is reliable and trustworthy since it is made by a mother.

	10	5	0
a. Mother promise			
b. Mother's promise			
c. Promise of mother			
d.			

18. A type of lamp used only by doctors.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Doctor lamp			
b. Doctor's lamp			
c. Lamp of doctors			
d.			

19. A tree that is grown in a university campus.

	<b>10</b>	<b>5</b>	<b>0</b>
a. University tree			
b. University's tree			
c. Tree of university			
d.			

20. A logo designed with a picture or symbol of plane.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Plane logo			
b. Plane's logo			
c. Logo of plane			
d.			

21. A bag that is used for carrying potatoes.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Potato bag			
b. Potato's bag			
c. Bag of potatoes			
d.			

22. A mountain where only tigers live.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Tiger mountain			
b. Tiger's mountain			
c. Mountain of tigers			
d.			

23. The songs that someone listens when they feel depressed.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Depression song			
b. Depression's song			
c. Song of depression			
d.			

24. A special language; words or sounds that babies use to communicate with others.

	<b>10</b>	<b>5</b>	<b>0</b>
a. Baby language			
b. Baby's language			
c. Language of babies			

d.			
----	--	--	--

25. A clever plan designed to trick teachers, set by their students.

	10	5	0
a. Teacher trap			
b. Teacher's trap			
c. Trap of Teachers			
d.			

26. A type of printer that is used in the library.

	10	5	0
a. Library printer			
b. Library's printer			
c. Printer of library			
d.			

27. A type of coffee that drivers drink to stay awake while driving cars.

	10	5	0
a. Driver coffee			
b. Driver's coffee			
c. Coffee of drivers			
d.			

28. A type of soup that is made to help a sick person to get better.

	10	5	0
a. Patient soup			
b. Patient's soup			
c. Soup of patients			
d.			

29. A type of herbal tea that athletes drink to boost their energy.

	10	5	0
a. Athlete tea			
b. Athlete's tea			
c. Tea of athletes			
d.			

30. A type of lemon that is only used for salads.

	10	5	0
a. Salad lemon			
b. Salad's lemon			
c. Lemon of salads			
d.			

**Appendix D – Interpretation Task**

Please look at the compound below and write what it means to you.

There is no “right or wrong answer.”

	<b>What does it mean?</b>
<b>1. Earthquake bag</b>	
<b>2. Guest slipper</b>	
<b>3. Coffee fortune-telling</b>	
<b>4. Graduation wreath</b>	
<b>5. Chimney socks</b>	
<b>6. Friendship cup</b>	
<b>7. Groom coffee</b>	
<b>8. Flower bottle</b>	
<b>9. Spinach restaurant</b>	
<b>10. Patient handkerchief</b>	
<b>11. Air mushroom</b>	
<b>12. Dog bone</b>	
<b>13. Kangaroo milk</b>	
<b>14. Restaurant fish</b>	
<b>15. Horse pillow</b>	