THE PLACE DEIXIS OF MODERN STANDARD ARABIC:

A CLOSER LOOK AT THE DIMENSIONAL SYSTEM AND THE FACTORS
THAT CONTROL THE CHOICE OF PLACE DEICTIC EXPRESSIONS

by

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DEDICATION

      This dissertation is dedicated to my family for their encouragement, help, and continuous support. Thank you for being part of my journey.

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ABSTRACT

The Place Deixis of Modern Standard Arabic:

A Closer Look at the Dimensional System and the Factors that Control the

Choice of Place Deictic Expressions

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This dissertation investigates place deixis in Modern Standard Arabic (MSA) focusing primarily on two issues, 1) examining the dimensional system of place deixis in MSA as opposed to Classical Arabic, and 2) exploring the factors that control the choice of place deictic expressions in MSA: Distance (traditional factor), Visibility, and Contact/Control. While the previous literature focused on one-to-one comparison between Distance and one of the other factors (Imai, 2003; Jarbou, 2010; Peeters, Azar, & Ozyurek, 2014), this dissertation offers a more comprehensive comparison in which all of these factors are compared to each other in different contexts and settings. To address these two issues, a series of three experiments were conducted to examine the hierarchy that is used in the choice of place deictic expressions in MSA. The first experiment aims to shed light on the contradicting reporting of the dimensional system of place deixis of MSA (Fillmore, 1971; Hassan,1973; Kiss & Alexiadou, 2015) by examining the usage of three deictic expressions that were used in Classical Arabic: *huna* 'here'

(proximal distance), *hunaka* 'there' (medial distance), and *hunalika* 'over there' (distal distance). The results collected by Qualtrics from 1332 adult native speakers of Arabic native indicate that *hunalika* 'over there' is on the way to being subsumed by the medial deictic expression *hunaka* 'there', and MSA is turning to become a two-dimensional place deictic system. The second experiment investigated the effect of visibility on the choice of place deictic expressions. The results of 1078 subjects suggested that visibility indeed affects the choice of speakers of MSA in two ways: 1) extending the mid-range distance in the eye of interlocutors by making MSA native speakers use more distal deictic expressions such as *hunaka* (there) instead of *hune* (here), and 2) avoiding place deictic expressions by reverting to use more descriptive phrases and prepositions. Finally, the third experiment explored the effect of contact/control on the choice of place deictic expressions. The findings of 1104 native speakers of Arabic indicated a significant impact of contact/control on the choice of all three place deictic expressions *huna* 'here', *hunaka* 'there', and *hunalika* 'over there'. The participants' preference changed in all cases after incorporating the contact factor into the use of more proximate locative adverbs such as *huna* (here). These results, taken together, suggest that the choice of locative adverbs is more complex and affected by multiple elements, and the traditional factor of distance may not be sufficient to understand the process of choice of spatial deictic items in MSA.

Chapter 1

An Overview of Place Deixis

1.1 Introduction

Although deixis has been studied in Philosophy for the past century (Frege 1892;

Bar-Hillel 1954; Kaplan 1977,1979; Perry 1977,1997; Heisser 2016; Nintemann, Robbers, &

Hober 2020), understanding the motivation for the choice of deictic expressions in a given

language is still not fully understood. In particular, while many linguistic overviews of indexicals

and demonstratives have been presented in the past three decades, several assumptions and

theories that were drawn in light of the previous studies remain rather controversial (Peeters,

Azar, & Ozyurek, 2014; Imai, 2003). One of the main controversial issues is determining the

factors that control the choice of deictic expressions, particularly in place deixis, in which the

traditional view was not found to be accurate in many contexts (Jarbou, 2010; Imai, 2003). In the

traditional view, the factor that controls deictic expressions of place deixis is thought to be the

distance between the speaker and the located referent. However, later studies challenged this

view, and provided evidence and contexts in which distance is not the primary factor (Jarbou,

2010). These factors include visibility, accessibility, contact and control, visual joint attention,

and others which will be discussed later in the dissertation. The second issue that affected the

assumptions of the past literature is the limited number of examined non-Indo-European

languages, such as Semitic and Asian languages, as most of the theories that are drawn are based

primarily on Indo-European languages. Examining the deictic system of different language

families helps the theories of deixis better and enrich our understanding of the universality of deixis types and their applications across languages.

Since exploring all types of deixis is beyond the scope of this dissertation, the current focus of this dissertation is on place deixis, and the factors that control the use of space deictic expressions. The examination of place deixis is carried out in Modern Standard Arabic (MSA), and targets specifically locative adverbs. MSA is currently spoken in 27 countries as an official language, and is the main branch of Classical Arabic, which is derived from the south-central branch of Semitic languages. Classical Arabic, the parent of MSA, has a very rich place deictic system in which demonstratives, for instance, have over 15 types compared to the salient 2 types found in most languages including English, French, Italian, Chinese, and others (more discussions of MSA background and Classical Arabic in section 1.4.2). MSA, being the main branch of Classical Arabic, and being also a non-Indo-European language, poses an opportunity for understanding how rich place deictic systems of non-Indo-European languages evolve, function, and change over time. In the current and coming chapters, the MSA deictic system and deixis in general is examined by a series of experiments that target specifically locative adverbs of place deixis in MSA in order to understand the dimensional system of MSA along with the factors that control the choice of place deictic expressions. In this chapter, an overview of place deixis is introduced by laying out the types and categories of space deictic expressions. Then, the chapter discusses the factors that can control the choice of place deictic expressions, and concludes by addressing the justification of the study and the research questions of the dissertation.

1.2 Deixis and Deictic expressions

Bühler (1934) refers to deictic expressions - such as *this* and *here* - as "a class of signals for themselves" (p. 122) that are responsible for reception signals, and he differentiates between them and the imperative items (the action signals, as he refers to them) such as *come* and *write*. While the imperative items have a function of bringing a certain job on the part of the hearer, Bühler argues that the deictic expressions merely cause the gaze to turn resulting in a reception. In other words, deictic expressions according to Bühler are items that are responsible for making the hearer pay attention, and look toward the speaker in order to receive the intended signal such as the gesture. Fillmore (1971) identifies a broader role of deictic expressions as items that require some sort of contextualization, that "are interpreted by knowing certain aspects of the communication act in which the utterances in question can play a role" (p. 258). Deixis does not presuppose that the referent should already have its place in the discourse, the way Anaphora does (Lyons, 1977), but rather, as Lyons puts it, is "one of the principle means open to us of putting entities into the universe of the discourse, so that we can refer to them subsequently" (p. 673). Understanding the function of deictic expressions is dependent on the interlocutor's ability to monitor the cues, context, and signals of the conversation. Deixis concerns two things, 1) how language encodes the speech events and the conversation context, and 2) how the interpretation of the utterance is relying on the analysis of these speech events and contexts (Levinson, 1983). Diessel (1999) defined deictic expressions as the "linguistic elements whose interpretation makes crucial reference to some aspect of the speech situation" (p. 35). It is important to recognize that the items that are used to express deictic use may be used in other contexts to express a different

meaning that is not related to deixis. Therefore, Huang (2007) captures this distinction by referring to deictic expressions simply as "expressions that have a deictic use as basic or central" (Huang, 2007). That is, they require information outside the utterance in order to identify the referent (see examples of both types in section 1.2.1 and section 1.2.2). Not having the deictic characteristic would essentially exclude them from the deixis category even if they share the same expression.

1.2.1 Expressions with deictic use

Common examples of deictic expressions are *I*, *you*, *here*, *there*, *now*, or *tomorrow*. These expressions require observing the speech act in order for the hearer to locate the referents. Consider the following examples:

1. A. *I* like *you*.   B. *I* like *you* too.

2. Sally is standing *there*.

3. You have to submit the report *now*.

The deictic expressions *I*, *you*, *there*, and *now* in example (1), (2) and (3) cannot be completely understood without observing the aspects of the utterance in order to understand who is the speaker, the listener, the time the action took place, and the place of the referent. A simple sentence such as (1) can rather be complicated if it was not associated with the cues that help the observer to know the referents. The expression *I* and *you*, for instance, would require the interlocutor to observe the speaker who made the utterance to identify *I*, the first referent (person A), and the addressee to understand *you* the second referent (person B). Failing to monitor the conversation may result in an inability to recognize the referents as these referents change

constantly in the same conversation from person to another. For instance, *I* that referred to person A in the first utterance may be used to refer to person B in the second utterance if person B replied: *I like you too,* and the same is true with *you.* Therefore, the constant monitoring of the cues and aspects of the utterance is crucial for interlocutors due to the rapid nature of deictic expressions in shifting between referents.

A similar role can be found with the item *there* in sentence (2) as hearing this sentence without looking at the gesture of the speaker would prevent the understanding of the location of the intended place. Hearing such sentences over a phone or a speaker, for instance, would not be sufficient to understand the deictic expression *there* as these situations lack the visual monitoring of the conversation. Similar expressions are *here, this,* and *that*, in which they elicit the addressee to look toward the speaker in order to receive the required cues. These special expressions, specifically *here* and *there*, are the main focus of the dissertation, and they will be discussed in detail later in section (1.4).

Knowing the time in which the utterance took place is also central in some instances, as shown by the deictic expression *now* in sentence (3). Reading such a sentence on a board will not allow the reader to realize what is meant by this expression as the meaning of *now* during the reading of the sentence is different from the meaning of *now* if the same sentence is read 10 minutes later, and essentially different from the meaning during the time the sentence was written. This expression is precise in documenting the timestamp of the targeted event compared to other expressions such as *today*, *tomorrow, this week, this month,* or *this year* in which they have a longer time span. Replacing, for example, the expression *now* with *today (*you have to submit the report *today)* would cover a longer time range that is less precise in documenting the

exact time but still requires knowing the day the note was written. To recap, observing the conversation and its surroundings is key to comprehending these deictic expressions, and this observation and the ease of comprehension can essentially vary from one deictic expression to another based on the characteristics of these items.

1.2.2 Expressions with non-deictic use

Contrary to the expressions in the previous section, there are non-deictic expressions such as third-person pronouns *he* and *she* in which the deictic use is not basic or central.

4. *She* went home.

Observing the physical aspect of the utterance does not help comprehend example (4) if the listener does not already know the referent based on the previous utterance. It is worth mentioning that a deictic expression such as first- or second-person pronoun, which are mostly used as deictic items, can be - in some context – used as non-deictic expressions.

5. If *you* respect people, people will respect *you*.

Example (5) shows a second-person pronoun being used as a non-deictic expression specifically as a general statement that can be understood by any listener without the need to monitor the dialogue. The use of *you* in this context is intended to be applied to any person without specifying any referent which is different from the typical use of *you* in which the addressee is usually the target. Items that are mostly used for deictic functions can be used in some context for non-deictic uses, and the same is true for non-deictic items as they can also be used deictically in other contexts as well.

6. Sam did not break the window, *he* did.

Example (6) shows *he* (which is a typical non-deictic expression) being used as a deictic

expression in which it requires - in this context - monitoring the physical aspect of the

conversation in order to know who broke the window (more discussing in section 1.3).

In this study, when the term deictic expression is used, it refers solely to those

expressions that have dominant deictic use as shown in examples (1), (2) and (3), and the focus

will be on the domain of spatial deixis indicated in example (2). The following section lays out

the subcategories of place deictic expression, which may include items that interchange with

some of the examples here, nevertheless, discussing them with their relevant types help clarify

the targeted subcategories better.

1.3 Types of spatial expressions

1.3.1 deictic expressions types

Deictic expressions – which have a deictic use as basic or central – as described in the

previous section, have two types: Gestural and Symbolic. Gestural use can be "properly

interpreted only by a direct, moment-by-moment monitoring of some physical aspects of the

speech events" (Huang, 2007, p. 172). This type requires the interlocutors to observe the physical

aspect of the dialogue in order to fully understand it.

7. Place the books *here*.

Example (7) is an instance of gestural use that requires the addressee's attention to grasp the meaning. If the listener in example (7) was in the same place, listening to the speaker directly, standing in the same room, and facing the speaker during the conversation, but the listener only closed his/her eyes during the speaker's utterance, the listener will not be able to understand the deictic expression *here* because the physical monitoring of the conversation is not complete. The same can be said for example (2) in the previous section in which physical monitoring is required to understand the expression *there*.

The second type is the symbolic deictic expression which refers to uses that require knowing the basic Spatio-temporal parameters of the conversation (Huang, 2007). It is not required for the addressee/hearer to monitor the physical aspect of the conversation, rather, basic knowledge of the place, persons, event, and time is enough to understand the utterance. Fillmore (1975) described it as the deictic expression in which its "interpretation involves merely knowing certain aspects of the speech communication situation" (p. 40).

8. *This* village is beautiful.

In example (8) above, the knowledge of the location of which the speech event took place is merely enough to understand the deictic term *this*. The monitoring of the physical aspect of the conversation is not required on the addressee part nor the hand gesture is expected on the speaker part.

1.3.2 non-deictic expressions types

Non-deictic expression refers to referring expressions in which a deictic use is not essential. There are two types of non-deictic expressions: Anaphora and Cataphora. Green (1996) defined Anaphora as a "reference to an entity referred to or evoked in previous discourse" (p. 25). It is described as the "other portion of the same discourse the expression is coreferential with" (Fillmore, 1975, P. 40). Cataphora is similar to Anaphora, but the reference has not yet been identified, and it is identified later on.

9. Susan overslept yesterday. *She* was late to work.

10. *He* was very hungry. John immediately opened the fridge and ate an apple.

Example (9) and (10) shows the difference between Anaphoric and Cataphoric reference in which the former requires one to look backward to understand the context while the latter requires one to look forward to understand the referent. The focus of this study is not going to be about non-deictic expression, rather, it will concentrate on gestural deictic expressions. The next section introduces different types of dimensional systems of place deictic expressions and examines their uses.

1.4 Dimensional systems of place deictic expressions

1.4.1 Common dimensional systems of place expressions

Place deictic expressions typically show up as two main grammatical categories: demonstratives and locative adverbs. The representation of demonstratives and locative adverbs

varies from one language to another, in which some languages use only one place deictic expression and others use a very rich system that has more than 13 place deictic expressions (see Diessel, 1999, for a review). The simplest system is used by languages such as Czech which has only one demonstrative "*ten*" that is unmarked for distance (Anderson & Keenan, 1985). Most languages use a simple two-dimensional system of place deictic expressions, and the most prominent example of such a system is English, with items such as *this* which is used mostly to refer to a close distance and *that* which is used mostly to refer to a far distance. The example of locative adverbs in English is *here* which is used to point out a proximal referent, and *there* which is used for distal referents. This system is common and found in many languages including French, Italian, Modern Hebrew, Catalan, Chinese, and others (Huang, 2007).

On the other hand, there are some languages that use a richer system such as a three- or four-dimensional system such as Japanese and Spanish. Japanese for example has a four-dimensional system that is person-oriented. It uses the position of the interlocutors to indicate the location of the referents. For example, the system differentiates between the referents that are close to the speaker and the referents that are close to the listener. The system also uses a spatial expression when the distance is unknown as shown below.

これ *(kono, this)* – to refer to items that are close to the speakers.

それ *(sono, that)* – to refer to items that are close to the listener.

あれ *(ano – that)* – to refer to items that are far away from both the speaker and the listener.

どれ (*dono, which)* – when the location of the item is unknown.

Spanish on the other hand is a three-dimensional system that is distance oriented and uses three different deictic expressions (*este*, this; *ese*, that; *aquel*, that). The difference between the common two-dimensional system - discussed above – and the dimensional system of Spanish is that Spanish uses two referents to indicate non-proximal items: *ese* (that) which is used for far/mid-range referents and *aquel* (that) to refer to very far items, plus the use of the expression *este* (this) which is used for near referents. The previous deictic expressions are used for singular masculine referents as opposed to singular feminine place deictic expressions which are *esta* (this), *esa* (that), and *aquella* (that). Spanish also distinguishes in the use of demonstratives when referring to singular or plural referents for masculine and feminine expressions (plural masculine: *estos*, this; *esos*, that; *aquellos*, that | plural feminine: estas, this; *esas*, that; *aquellas*, that).

masculine		feminine		deictic expression	referent location
singular	plural	singular	plural		
este	esta	estos	estas	*this*	close
ese	esa	esos	esas	*that*	far
aquel	aquella	aquellos	aquellas	*that*	very far

Table 1: The type of spatial deictic expressions of demonstratives in Spanish

The details of the Spanish system are important for the current work as they resemble similarity to the system of Classical Arabic which is discussed in detail in the next section. Modern Standard Arabic – which is the focus of the current study – is one of the languages that is evolving, and the dimensional system is shifting between a three- and two- dimensional

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system. One of the aims of the current dissertation is to examine and determine the dimensional system of place deictic expressions in Modern Standard Arabic.

1.4.2 Dimensional system of place deixis in Arabic

Arabic has three different forms: Classical Arabic which refers to the period from 7th to 9th century, Modern Standard Arabic (MSA) which is the formal Arabic used today in the media, newspapers, and other formal settings, and Spoken Arabic – which will not be part of the discussion in this section – is the everyday language that differs from region to another. In Classical Arabic, the dimensional system of place deictics is defined and used clearly. Classical Arabic has a three-dimensional distance-oriented system that is similar to Spanish. The following expressions are the locative adverbs of Classical Arabic.

huna "here" is used for proximal distance.

hunaka "there" is used for medial distance.

hunalika "over there" is used for distal distance.

As for the demonstratives of Classical Arabic, they change based on gender and number of referents specifically singular, dual, and plural. The following demonstratives of Classical Arabic are based on singular masculine referent.

haða "this" is used to indicate a close referent.

ðaka "that" is used to indicate a referent in a medial distance.

ðalika "that" is used to indicate distal referent.

A comprehensive set of demonstratives that are used in Classical Arabic can be as large as 19 different deictic expressions (see Table 2).

	singular "this"		dual "that"		plural	
	male	female	male	female	male	female
close	*(ha)ða*	*(ha)ði*	*(ha)ðan*	*(ha)tan*	*(ha)'ula*	
medial	*ðaka*	*ðika*	*ðanika, ðakuma*	*tanika*	*'ula'ika, ðakum*	
distal	*ðalika*		*ðalikuma*		*ðalikum*	

Table 2: The deictic expressions of demonstrative in Classical Arabic

In Modern Standard Arabic, on the other hand, the uses of locative adverbs and demonstratives are not as clear as Classical Arabic. The reporting on the dimensional system of place deixis in Modern Standard Arabic is still contradicting. Kiss and Alexiadou (2015) and Fillmore (1971) on one hand, stated that Arabic has a two-dimensional system similar to English while Hassan (1973) as well as traditional Arab grammarians Ibn Hisham (2004), Sybawaih (1988), Ibn Mandhur (1993) argued that Arabic in fact is based on a three-dimensional system. In a preliminary study, Alluhaybi (2015) examined the dimensional system of place deixis in Modern Standard Arabic based on the analysis of natural occurring written sentences, and found that medial deictic expression *hunaka* 'there' is used more frequently to describe distal referents compared to *hunalika* 'over there' in MSA. The dimensional system of MSA is still not as clear as Classical Arabic, and needs further examination.

1.4.3 Rich place dimensional systems

The previously discussed spatial deictic systems are the common dimensional systems of place deixis that are used in most languages. However, there are other richer systems such as Chadic which is used to differentiate between two parameters: distance and visibility. Chadic has a four-dimensional system of place deictic expressions which are *nân* (here, near the speaker)*, nan* (there, near the listener)*, cân* (there, away from the speaker and listener but visible)*,* and *can* (over there, away from the speaker and listener and invisible) (Huang, 2007). Malagasy has a richer system of space deixis as it has seven place deictic items expressing different degrees of distance from the speaker as well as indicating visibility. For example, the speaker has the option of using 7 degrees of deictic expressions to express visible items including *atỳ* and *àto* (here) for proximal visible referents, *ào* and *àtsy* (there), for mid-range visible referents, and *àny*, *aròa*, and *arỳ* (over there) for distal visible referents (Rasoloson & Rubino, 2005). Malagasy uses a different set of 7 place deictic expressions for invisible referents including *etỳ* and *èto* (here) for proximal invisible items, *èo ètsy* (there), for mid-range invisible referents, and *èny*, *eròa*, and *erỳ* (over there) for distal invisible items (see Figure 1).

Spatial Deixis of Malagasy

	proximal		medial		distal		
visible	atỳ	àto	ào	àtsy	àny	aròa	arỳ
invisible	etỳ	èto	èo	ètsy	èny	eròa	erỳ
	here		there		over there		

Figure 1: The scale of spatial deictic expressions of Malagasy

The Australian languages Dyirbal exhibits one of the richest systems with a set of 15 deictic expressions including terms such as *daya* 'medium distance upward', *dayi* 'short distance upward', *guya* 'across the river', *balbalu* 'long-distance downriver', and others (Trask, 2013; See Table 3 for a summary of the dimensional system in other languages).

	Dimensional System	Place Deictic Expressions
Czech	1	*Ten 'this'*
English	2	*here, there | this, that*
Spanish	3	*este 'this', ese 'that', aquel 'that', dono* 'which'
Japanese	4	*kono 'this' , sono 'that', ano 'that', dono 'which'*
Chadic	4	*nân 'here', nan 'there near listener', cân 'there/visible', can 'over there/invisible'*
Malagasy	7	*aty, ato, ao, atsy, any, aroa, ary* *← close to speaker 'this' further from speaker 'that' →*
Dyirbal	15	*daya 'medium distance upward', dayi 'short distance upward', guya 'across the river', balbalu 'long distance downriver', etc.*

Table 3: The variety of dimensional system of spatial deictic expressions

In the next section, the factors that affect the choice of place deictic expressions are discussed. They illustrate that the traditional factor "distance" may not be the only aspect that influences the choice of language users.

1.5 Factors affecting the choice of place deictic expressions

1.5.1 Traditional view – Distance

Distance is the main factor that affects the choice of place deictic expressions in the

traditional literature in which languages were divided into distance-oriented such as Spanish and

person-oriented such as Japanese (Anderson & Keenan, 1985). Defining distance as the sole

factor of the choice of place deictic expressions, however, received much criticism that pointed

out that distance may not be the only factor that controls users' choice (Jarbou, 2010; Imai 2003;

Peeters, Azar, & Ozyurek, 2014). Jarbou argued that the traditional view looks at the place

deictic expressions "as representing a relationship between interlocutors and referents in a

physical spatiotemporal environment" (p. 3079). This view makes the choice of the place deictic

expression independent from the way the interlocutor views the context of the conversation. The

speaker will always be the deictic center in the conversation relative to the referent. As a result,

according to Jarbou, "'proximal' demonstratives are used to encode entities that are physically

close to the speaker while 'distal' ones encode entities that are located far from the speaker" (p.

3079). Jarbou challenged this view by pointing out that the choice of place deictic expressions

changes from proximal to distal expression – sometimes – in the same context to refer to the

same referent. This shift from one deictic expression to another cannot be explained solely by

distance, according to Jarbou. Imai (2003) also challenges the assumption of the traditional view

that distance is the primary factor for choice, and introduces another factor 'contact/control'. He

argued that "relative distance is generally assumed to be the universal and prima facie parameter

of spatial deixis. We challenge this assumption by arguing that the primary and universal

parameter is the speaker's [contact/control]" (p. 4). His assumption assumes that the contact of

the referent or controlling it is more important than the speaker's distance from it, which will be

discussed in detail in section 1.5.3. In the following section, I discuss other factors that may

influence the choice of place deictic expressions besides the traditional factor "distance".

1.5.2 Visibility

The effect of visibility is one of the factors that determine the choice of place deictic

expressions. This factor refers to the ability of the speaker/listener to see the referent. It usually

relies on the speaker's judgment when the referent is mostly hidden or partially hidden, and

whether or not to use the deictic expression that expresses invisibility if such expression is found

in the used language. Huang (2007) defined visibility as a factor that is "concerned with whether

or not the entity to be pointed to is within sight of the speaker from the place of speaking" (p.

199). The effect of *visibility* has been attested in many languages including Malagas, Chadic,

Kwakwala, Yupik, Daga, Mayan, Hausa, Coastal Yidin and others (Huang, 2007). Diessel (1999)

reported that this factor is common in native American languages, and usually they have an

independent deictic expression that expresses "out of sight" or "partially visible" referent. For

example, the Chadic language of the Hausa – which was briefly mentioned in section 1.4.3 –

uses a four-dimensional system that relies on visibility as a separate variable that needs to be

encoded in the utterance for distal referents. It uses four different deictic expressions as the

following:

nân – close to the speaker.

nan – close to the hearer.

cân – away from both of them, but still visible.

can – far away from both of them, and invisible.   (Huang, 2007)

In Chadic, *cân* and *can* are the place deictic expressions that are always used to express *visibility*. The factor of visibility can play a role in the choice of place deictic expression even in languages that do not employ a deictic term for visibility. In other words, having a specific deictic expression for visibility is not necessary, one deictic expression can be used to express visibility in one context, and distance in another. This factor will be examined in the current dissertation, and it will be employed in many contexts against distance in order to understand the hierarchy of factors that affect the choice of place deictic expressions in Modern Standard Arabic.

1.5.3 Contact/Control

Imai (2003) challenged the assumption of the traditional view of distance, and introduced *Contact/Control* as the primary and universal parameter for determining the choice of place deictic expression. Japanese has four place deictic expressions as discussed in section 1.4: *kono* 'this', *sono* 'that', *ano* 'that', and *dono* 'which'. Imai argued that the three deictic expressions *kono* 'this', *sono* 'that', and *ano* 'that' are possible candidates when a native speaker of Japanese is describing a cup at a table, roughly 80 cm away from the speaker. However, as soon as the speaker leans over the table and touches the cup, the only possible candidate to be used in this case is *kono* 'this'. The same is true if the speaker touched the cup with a long object such as a stick even if the cup is 160 cm away from the speaker which is a case of indirect contact. He stated that "As long as a referent is touched by the speaker, regardless of whether the referent is

held by the speaker or barely touched by the speaker's extended arm, the referent is referred to with a proximal form" (p. 136).

As for the case of control, holding the cup is a case of a direct control and inevitably direct contact, which involves the use of proximal deictic expression *kono* 'this'. When the speaker controls the object without touching it by using a string attached to it, it is a case of indirect control which also, according to Imai, involves mostly the use of the proximal deictic expression *kono* 'this'. If the speaker cannot control an object at all, such as a huge rock, but has a contact with it, it is enough to trigger the choice of proximal deictic expression. As a summary, "as long as the speaker had contact with or control of the referent either directly or indirectly, many speakers of languages in our data tended to use a proximal form" (p. 136). The *Contact/Control* parameter is examined in the current dissertation to determine the contexts in which such a parameter is found, and it is measured against both visibility and distance.

1.5.4 Other frameworks

There are other factors that may affect the choice of place deictic expressions such as Accessibility, Visual Joint Attention, age difference, liking the object, height relative to the speaker, and others. These factors will not be examined in the current dissertation, but they provide direction for future studies. One of these factors is the ability of a speaker to recall the referent, known as *Accessibility* which is a factor that may play a role in determining the choice of place deictic expressions (Burenhult, 2003; Jarbou, 2010; Peeters, Azar, & Ozyurek, 2014; Stevens & Zhang, 2013). Burenhult (2003) examined accessibility as a factor affecting the choice of place deictic terms in Jahai, and found that accessibility indeed played a role in speakers'

choice. Jahai's deictic system is rich, and includes eight distinct deictic expressions that express a range of meanings. Burenhult stated that "four of these distinctions, previously considered by the author to encode distance in relation to speaker and addressee, have recently been tentatively re-analysed in terms of participant-anchored accessibility rather than distance" (p. 365). Jarbou (2010) defined accessibility as the "degree of perceived 'accessibility' which the addressee, in particular, has in relation to referents." (p. 3078). He argued that the traditional view of distance cannot explain many of the contexts in Jordanian Arabic. For example, when a referent is "physically close to interlocutors but has low perceptibility, 'distals' have been used to encode it. Again, it is evident here that considerations of physical distance are inapplicable to explain demonstrative selection in SJA" (p. 3092). The previous studies show that 'accessibility' can influence the choice of place deictic terms even in Arabic. However, since this factor was already examined extensively in Jordanian Arabic, it will not be examined in the current dissertation.

Peeters, Azar, and Ozyurek (2014) introduced another factor that may affect the choice of deictic expression which is *Visual Joint Attention*. They criticized the traditional view that focused on 'physical proximity' when determining the choice of place deictic expressions, and stated that "recent work taking into account the multimodal context in which spatial demonstrative use is generally embedded shows that such accounts are too simplistic" (p. 1144). Peeters and colleagues (2014) manipulated three parameters that may affect the choice of place deictic terms in Dutch: visual attention, physical distance, and pointing gesture. They argued that manipulating such parameters based on the traditional view should not change the choice of place deictic expressions which turns out to be not true. Peeters and others (2014) found that the use of distal deictic expressions increased when there is a visual joint attention between the

speaker and the listener in comparison to the absence of visual joint attention. The argument is that a "Dutch distal demonstrative is used when no strong indicating is necessary because the referent is already in the focus of attention" (p. 1147). As for the pointing gesture, it affected solely the choice of distal deictic expression when the object was not close to the speaker.

There are other minor and less important frameworks that could have played a role in the choice of place deictic terms such as age difference, liking the object, height relative to the speaker, and others. For example, Esseili (2006) examined the effect of age – between adults and children – in determining the choice in place deictic terms, and she reported that age played a role in the choice of subjects of the deictic expression *this* and *that*. Kelly-Lopez (2005) investigated the role of liking an object in determining the choice of place deictic terms. She showed 11 apples – in which some of them were rotten – to 60 NS and NNS subjects and asked them about the apples they liked most and the apples they liked least. The findings showed that some participants favored the good apples, and chose proximal expressions to refer to them, and distanced themselves from the bad ones. Shopen (1985) reported about a factor that plays a role in determining the choice of some place deictic expressions in Daga. This factor is related to the height of the referent relative to the speaker and is attested in many languages in New Guinea and also found in Dyirbal and Abkhaz.

> *gali* 'down vertically'
>
> *gala* 'up vertically'
>
> *galu* 'straight in front' (Dyirbal Language; Shopen, 1985).

The examples above shows how Daga differentiate between *gali* (down vertically) and *gala* (up vertically) based on the referents height relative to the person who made the utterance

These factors which include accessibility, visual joint attention, age difference, liking the object, and height relative to the speaker are not going to be examined in determining the choice of place deictic terms, and are not going to be taken into consideration when designing the series of experiments to examine the frameworks in MSA. The following table summarizes the factors that were discussed in this section, and the factors in the first three rows are explored in this dissertation.

Factors	Languages that have it
Distance (traditional)	*Found almost in every language (e.g. Arabic, English)*
Visibility	*Kwakwala, Yupik, Daga, Mayan, Hausa, Coastal Yidin*
Contact/Control	*Japanese*
Accessibility	*Jahai, Arabic*
Visual Joint Attention	*Dutch*
height relative to the speaker	*New Guinea, Dyirbal, Abkhaz*

Table 4: A summary of the common factors that affect the choice of place deictic expressions

The next section details the aim of the series of experiments conducted in the following chapters, as well as the research questions of this dissertation.

1.6 Research Questions

All the previously discussed factors play a role one way or another in the choice of place deictic expressions. Some of these factors have been attested only in certain languages, while others can be combined with other factors, and affect the users' choice interchangeably. In the current study, the aim is to understand the role of these factors in MSA, the hierarchy of each one of them, how they blend with each other, and in what context they change from one factor to another. The factors that are examined in this dissertation are distance, visibility, and contact and control. In addition, this dissertation examines the current uses of MSA in order to determine the system of place deictic expressions. Understanding the dimensional system of spatial deictic is essential to better understand the factors that affect its choice. Therefore, the first experiment in this dissertation is designed to examine the dimensional system of place deixis in MSA. The research questions of the current dissertation are the following:

I.   What is the dimensional system of place deictic expressions in MSA (i.e. is it a two-place, three-place)?

II. Is traditional view (distance) sufficient to determine the choice of place deictic expressions and why?

III. What is the role of visibility in the choice of place deictic expressions in MSA?

IV. In what way does the contact and control factor affect the choice of locative adverbs in MSA?

1.7 Overview of the upcoming chapters

In order to answer these questions, the current dissertation is categorized into five chapters that discuss and answer the proposed research questions. The first chapter starts with an overview of place deictic expression and its application, and the research questions of the current dissertation. The following three chapters are concerned with the issues of the research questions and the experiments that will be conducted to address them including examining the dimensional system of MSA, measuring the effect of distance, visibility, and contact/control. The final chapter is an extensive main discussion of the previous three experiments conducted in chapter 2, 3 and 4, and provides a conclusion for the dissertation as well as a door for future studies. These chapters will be discussed in detail in the following subsections:

Chapter 1 : An overview of place deixis

The first chapter is an overview of theories of place deixis and their application. The chapter is divided into two main sections: the first section summarizes the traditional theories of place deixis, and the traditional factors that control the choice of deictic items. This section discusses the categories and types of place deixis and focuses mainly on demonstratives (e.g. *this* and *that*) and locative adverbs (e.g. *here* and *there*). In general, this section is a summary of the traditional theories of place deixis particularly in a period dated from 1975 until 1995. Section two is concerned with the current theories of place deixis and discusses the changes that were proposed to the old theories. This section tackles the new factors (e.g. control, accessibility,

contact) that were proposed to replace/enhance the old factors (e.g. distance), and to explore whether they play a crucial role in determining the choice of place deictic items.

Chapter 2 : Examining the dimensional system of MSA

This chapter conducts an experiment that targets the dimensional system of place deixis in MSA. The discussion of this experiment shed light on some of the contradicting issues that are raised in RQ2 regarding the dimensional system of MSA and the changes that might have happened to Classical Arabic. The experiment examines the dimensional system of MSA focusing mainly on locative adverbs of Classical Arabic *huna* (here, used for close referents), *hunaka* (there, used for medial-distant referents), and *hunalika* (over there, used for far away referents). The main goal was to determine whether or not MSA has a three- or two-dimensional system of place deixis. The study targets particularly the place deictic expression *hunalika* 'over there' – which is used for far away referents – and examines whether or not is still being used in MSA.

In this experiment, the participants receive a survey that targets the uses of locative adverbs in MSA, and the survey questions varied from direct questions to indirect ones. The indirect survey questions, which were placed at the beginning of the survey, were designed to elicit the use of medial and distal referents. For example, one of the survey questions includes a picture that requires subjects to use locative adverbs to locate proximal, medial, and distal referents. The subject would have to imagine being in the viewpoint of a character and write the suitable locative adverbs (see Figure 2). Participants are also asked to do a natural rating of certain sentences that are based on similar pictures. Participants had to rate whether it is natural

for the character to mention a certain deictic expression based on its location and distance

relative to the referents in the picture. This task helps understand the acceptance level of certain

deictic expressions in MSA.

Figure 2: An illustration of the viewpoint of a human character with different referents

The survey also includes direct questions that asked participants about their knowledge of place

deictic expressions, and whether or not they know the difference between medial and distal

deictic expressions of Arabic.

The results clearly show that *hunaka* (there) is dominating *hunalika* (over there) in terms

of use, as the majority of the participants chose it to indicate distal referents. These results show

a clear preference for the medial deictic expression *hunaka* (there) over *hunalika* (over there) as

it was preferred by the majority of participants in distal cases. It seems that the distal distance is

on the way of being subsumed by the medial deictic expression *hunaka* (there).

The result of the natural rating scale question is important because it shows that the

choice of *hunaka* (there) over *hunalika* (over there) is not only a matter of preference, rather, it

shows that the natural use and acceptance of *hunalika* (over there) for distal referents is

decreasing in all levels compared to *hunaka* (there) in MSA. The majority of participants still hold a clear understanding that *hunalika* (over there) as an expression that is not used for proximal referents. However, participants do not seem to prefer the use of this locative adverb in general, as it was rated significantly lower for all distal referents. The use of *hunalika* (over there) seems confusing for the majority of participants, and this confusion was reflected in the natural rating of this deictic expression.

Chapter 3 : The effect of visibility on the choice of place deictic expression

The previous chapter focuses on the traditional factor: distance, which is a central factor that affects the preference of spatial deictic expressions. However, other factors such as *contact/control*, *visibility*, and *accessibility* may also play an important role in determining the choice of place deictic terms. This chapter examines the effect of *visibility* by using an advanced survey that uses different types of questions including sentence completion, multiple choice, reaction to pictures, and sentence rating. The methodology used in this chapter is similar to the one used in Chapter 2. For example, users do sentence completion based on the location of the referents relative to the location of a character found in the picture. The questions include different referents that vary in terms of distance and visibility, and focus on measuring visibility against distance by using similar images that are different by the visibility factor (see chart 3).

Figure 3 below shows two sets of pictures that have a referent appearing in the same location, visible in one picture, and invisible in the other. The set on the right side shows a distal house that appears clearly visible in the picture at the bottom, and mostly invisible in the picture at the top. The left set contains a referent, which is a *hot air balloon* that is also visible in the

bottom picture, and hidden behind the cloud in the upper picture. Participants are shown both pictures randomly during the surveys in order to measure any differences between the two factors. For instance, if a participant chooses a certain place deictic expression (e.g. here) when a referent is

Figure 3: Two sets of pictures are shown to participants to measure the effect of visibility over distance.

visible and located in a medial distance, then, changed the choice to *there* when the same picture appeared again with the referent being partially/mostly invisible, this indicates that the factor of visibility has a higher hierarchy in the medial distance. If, however, the choice of spatial deictic term did not change based on visibility of the referent, this indicates a higher hierarchy of

distance. The researcher expects the visibility factor to be important only in the medial distance form. The proximal and distal location are not expected to be affected by the visibility factor.

Chapter 4 : The effect of contact/control in the choice of place deictic expression

This chapter measures the effect of *contact/control* on the choice of spatial deictic terms, and measures it against distance and visibility. Similar to the previous chapters, the *contact/control factor* is examined using an advanced survey that uses different types of questions to elicit participants' reaction. For example, one of the ways that *contact/control* is examined, is by showing participants the viewpoint of a human character pointing to a medial-distant referent, and asking them about the place deictic expression that they could use. Then, the same referent in the same distance is shown while the character is able to touch it with a long stick, and asking the same participants to suggest the place deictic items that could be used in this context.

The design of the experiment relies on a series of comparisons that aim to identify the hierarchy of the factors that determine the choice of place deictic expressions in MSA. Each one of these factors (*contact/control* and *visibility*) is compared to the traditional factor (*distance*) to determine which factor has more priority than the traditional factor. For example, the *contact/control* factor is considered to have more priority than distance if proximal deictic items are used in distal distance when the *contact/control* is applied in this setting. After comparing the factors to distance, the factors that have more priority are compared to each other in order to establish the hierarchy that is used in MSA. It is true that the hierarchy of these factors can

change based on the context and setting of the situation, therefore, this experiment includes multiple contexts and settings in order to achieve the most comprehensive ranking.

The number of the participants in each of the previous surveys are at least 1000 participants. All participants are adult and native speakers of Arabic, and they are recruited online similar to the first experiment. This large sample size is needed in the comparisons of the factors in order to minimize the errors caused by low participation, add more power to the study, get a more reflective picture of the current MSA system, and achieve the best possible outcome.

Chapter 5 : General Discussion and conclusion

This chapter provides a general discussion that covers chapter 2, chapter 3, and chapter 4 experiments. It starts by summarizing the previous experiments and their implications. Then, it dives into some discussions about the experiments as a whole. This chapter is intended to provide a general discussion that ties the previous three experiments together as well as providing a conclusion to the dissertation. It also discusses some ideas for future studies to further examine the system of place dexis in MSA.

Chapter 2

Experiment 1

The dimensional system of MSA

2.1 Introduction

This chapter examines the dimensional system of Modern Standard Arabic, and aims to

shed light on the first research question of the dissertation, that is, is MSA a three- or two-

dimensional system, and what are the diachronic changes that occurred to MSA in terms of Place

deictic expressions. These questions are addressed through an experiment that focuses mainly on

the deictic expression *hunalika* (over there), which is used to indicate distal referents in Classical

Arabic. As discussed in Chapter 1, Classical Arabic is distance oriented and uses a

three-dimensional system *huna* (here), *hunaka* (there), and *hunalika* (over there); however, the

system of MSA, which is the main branch of Classical Arabic is not clearly defined as it shifts

between two- and three-dimensional system. This chapter tries to define the lines for the

dimensional system of MSA using comprehensive surveys that are designed to elicit the uses of

Native Arabic speakers.

2.2 Methodology

2.2.1 Materials

The survey is created to stimulate the use of place deictics targeting locative adverbs in

Modern Standard Arabic, and focusing primarily on the use of the following deictic expressions:

huna 'here', *hunaka* 'there', and *hunalika* 'over there'. The instruction of the surveys and the questions are written in Modern Standard Arabic, and participants are instructed to write their answers using MSA. The survey includes 14 questions that are divided into two parts: background questions and data collection questions.

2.2.1.1 Part 1: Background questions

The first part of the survey collects information about the subjects' backgrounds, age, education level, and fluency in Modern Standard Arabic. It includes questions about the country of the participants, the city they grew up in, and the dialect that they spoke at home. The survey also asks participants about the time in preschool/school they started learning Modern Standard Arabic, and the age they acquired MSA. Then, it concludes by asking participants to self-evaluate their level of proficiency in Modern Standard Arabic by focusing on four categories: writing, reading, speaking, and listening.

This part focuses on knowing a general idea about the participants and their qualifications. Some questions of this part are used as a filter to exclude participants who do not qualify for the survey. For example, any participant who reports that his/her age is less than 18 years old is excluded from the survey. Some questions are used as independent variables to check the difference between the participants in terms of education level, dialect background, age, etc., and measure whether or not such differences play any significant role in their choices of place deictic expressions.

2.2.1.2 Part 2: Content questions

The second part collects information about the choices of locative adverbs in Modern Standard Arabic focusing on spatial deictic expressions. It includes four types of questions: fill in the blank, rating scale, multiple choice, and open-ended question. This part is introduced to participants after they finish answering background questions. Participants are expected to answer both parts for their participation to be counted. The participants who complete most/part of the survey, and do not answer the final question of the survey are not included or analyzed in the results section. This part has only one optional question which is the open-ended question which is discussed later. The next sections describe each type of the second part questions.

2.2.1.2.1 Fill in the blank

The survey includes two types of fill-in-the-blank questions: 1) the first type includes questions that require participants to fill in banks based on context, and 2) the second type requires participants to fill in banks based on their reaction to illustrative images. The first type asks participants to write locative adverbs that are used for proximal and distal referents. The first item - which is about the locative adverb that is used for a proximal referent - is answered as an example for the participants to help them understand the task. For example, participants are given statements such as: *The locative adverbs that are used for proximal items are ....* , and participants are asked to fill in the blank with items such as *huna* (here). The second type requires subjects to use locative adverbs to locate proximal, medial distance and distal referents. The subjects have to imagine a scenario in which they are required to point at specific referents

and mention the suitable locative adverbs based on an illustrative image (See Figure 4 as an

example; See Appendix Q10 and Q11 for more details).

Figure 4: Example of fill-in-the-blank questions in which participants view the scene

from the viewpoint of a human character, and write the suitable locative adverbs.

Participants are given items such as (1) or (2) below, and are expected to answer them with the

suitable locative adverb including *huna* (here), *hunaka* (there), or *hunalika* (over there).

1) *alwurdah muwjodah* ....   (The flower is ....)   الوردة موجودة ....

2) *almbani ashahigah muwjodah* ....   (The skyscrapers are ....)   المباني الشاهقة موجودة ....

The blanks in this section are forced, meaning each participant has to fill-in-the blanks with an

answer to proceed. However, participants are not forced to write a specific locative adverb, but

rather, they are left to decide and write the answer they deem suitable.

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2.2.1.2.2 Rating scale

      For the next question type, the style and instructions of the rating scale questions are similar to the instructions found in the fill-in-the-blank questions. However, participants in this section are asked to rate the naturality of the use of certain locative adverbs using a scale of one through five, in which five indicates the most natural sentence, and one indicates the least natural sentence. The participants are shown a picture, and asked if it is natural to say a particular locative adverb if they were standing in the character's location (see Figure 5).
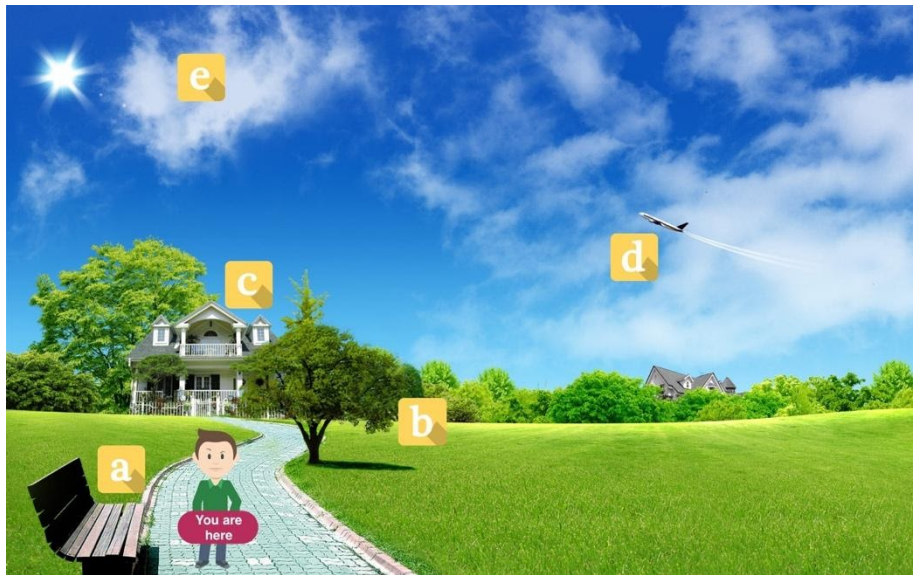
Figure 5: Example of the rating scale questions in which participants view the scene from the viewpoint of a human character, and rate the sentences provided to them from 1 to 5 based on naturality.

For example, in Figure 5, the participants are given a sentence such as the below, and asked to rate the naturality of this sentence for users who are standing in the location of the character in the image.

al-kursi hunak   (The chair is there)   الكرسي موجود هناك

The sentence above is supposed to be rated unnatural as the character in figure 5 is standing next to the chair, and the natural locative adverb in this case is *huna* 'here'.

2.2.1.2.3 Open ended & Multiple choice

In the next question type, the survey utilizes open-ended questions to help understand the participants perception of locative adverbs of spatial deictic expressions. The open-ended questions ask participants directly about the difference between *hunaka* 'there' and *hunalika* 'over there'. As discussed in chapter 1, this question is designed to see whether users of Modern Standard Arabic are aware of the differences between *hunaka* 'there' and *hunalika* 'over there' that are found in Classical Arabic, mainly distance. As mentioned before, the answer to this question is not forced, and participants are given the option to skip the question if needed.

The survey also uses multiple choice questions at the end of the survey to force participants to reveal their understanding of the distance concept of locative adverbs of MSA. Participants are asked about the place deictic expression that is used for the furthest distance, and they are given the options of *hunaka* 'there', *hunalika* 'over there', and equal distance. Since this question partially reveals the aim of the survey, it is placed at the end of the survey, and participants are not allowed to go backward in the survey, and change their answers.

2.2.2 Participants

The study has 1332 adult native speakers of Arabic who were recruited online using two different social media platforms. The first platform, *Instagram*, was used first, and successfully recruited 860 participants who participated voluntarily and completed all the questions of the survey. However, since the participants of this group are young, as 99% of participants are under 40 years old except 10 participants, another data collecting was initiated targeting the older generation using another social media platform *Twitter*. The second data collection recruited additional 472 participants in which over 33% of them (159) are older than 40 years old. The majority of the participants are from Saudi Arabia (1200), followed by the United Arab Emirates (29), Kuwait (19), Yemen (18), and others (66) (See Appendix Q3). The major cities that the participants grew up in are Riyadh which is the capital of Saudi Arabia (415), Jeddah, located in the western of Saudi Arabia (110), followed by Al-Qasim (99), Dammam (59), Al-Madina (49), Makkah (47), and other cities that are mostly located in Saudi Arabia. The dialect that most of the participants spoke is Najdi, which is the name of the dialect that is spoken in the central region of Saudi Arabia (612), followed by Hijazi dialect - western dialect of Saudi Arabia - (258), southern dialect of Saudi Arabia (141), and eastern dialect of Saudi Arabia (45), among others (See Appendix Q4 and Q5 for details).

Participants' ages ranged between 18 to 60 years old. 499 participants reported that their age is 18-24 years old, while 382 others reported that they are 25-30 years old. 278 participants stated that they are between 30 and 40 years old, and 169 participants reported that they are between 40 and 60 years old. Only 4 participants reported that they are older than 60 years old.

The participants' Age when they learned Modern Standard Arabic has a smaller range. The majority of them (917 participants) learned Modern Standard Arabic between 4-10 years old, and 385 participants learned Modern Standard Arabic after 11 years old. (See Chart 1 for details).
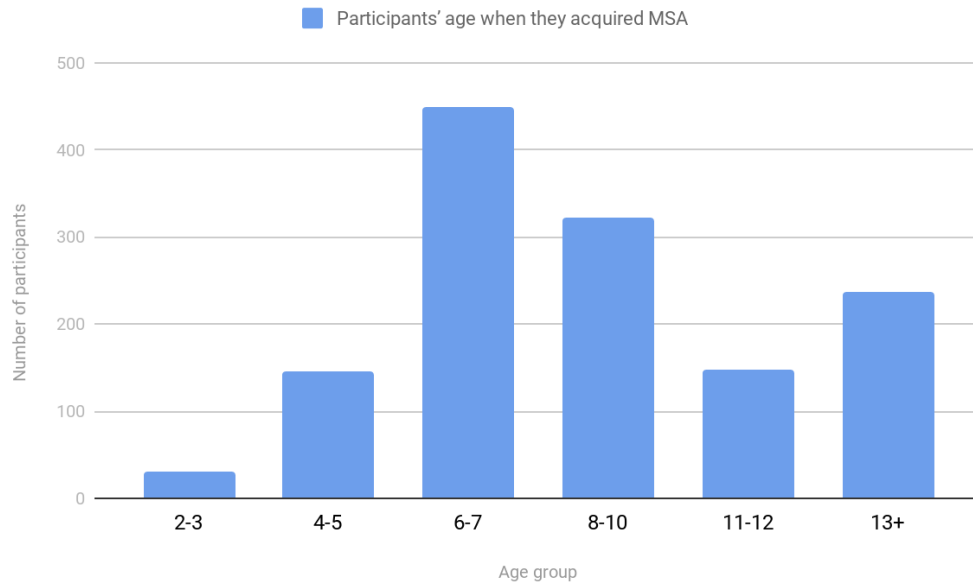
Chart 1: The participants' age when they learned Modern Standard Arabic represented by age group.

The participants age when acquiring Modern Standard Arabic align with school time. 207 participants reported that they learned Modern Standard Arabic before elementary school, 855 participants learned Modern Standard Arabic during elementary school, 177 learned Modern Standard Arabic in the intermediate school, and only 93 participants learned Modern Standard Arabic after that (refer to Appendix Q6 and Q7 for details).

As for the level of education, the majority of participants (967 subjects) have a bachelor's degree, and 87 participants have a postgraduate degree. 232 participants have a high school diploma, and only 46 participants reported that they have less than a high diploma, or they did not complete school.

2.2.3 Procedure

The online survey was prepared and created using Qualtrics surveys. All the participants are naïve to the purpose of the experiment, however, a general idea about the study is provided to the participants at the beginning of the survey. The survey is approved by the Institutional Review Board at UTA, and is preceded by instructions that explain to the participants the process of the survey. The participants are informed about the purpose, procedure, and duration of the study, the participants' confidentiality, and their ability to withdraw at any point at their discretion. While they are anonymous, all participants reviewed the agreement and consented to take part in the experiment. Before starting the survey, the participants are reminded about the definition of Modern Standard Arabic and its settings in order not to be confused with Classical Arabic. The participants are not asked to use specific locative adverbs of MSA in the instructions of the survey, and they are left to use whatever place deictic expression they prefer. Each question in the survey is preceded by one solved example to help participants understand the task of the questions.

To navigate between questions, the participants have to click a button below the question to move forward. The moving backward button is disabled in the survey to protect the original answers of the participants. The layer of protection for the original answers is added to prevent

subjects from going back and changing their answers particularly after knowing the purpose of the experiment. Each question is presented in a separate page to help participants focus on the asked question. The forced response – which means that participants cannot proceed without answering the question – is enabled for fill-in-the-blank, rating scale, and multiple-choice questions. However, open-ended questions are left optional to answer. The survey is designed to recognize subjects' devices within a period of two weeks using *Cookies* which allow users to pause at any time, and complete the survey on another day if needed. To help motivate participants, the survey used a percentage progress bar that increases after finishing each question to indicate the remaining time. The survey took about 15 minutes for each participant to complete.

2.3 Results

The participants self-evaluated their competence in Modern Standard Arabic at the beginning of the survey. The means of the self-evaluation results (6 highest – 1 lowest) of reading, writing, speaking, and listening are 5.37, 4.93, 4.34, and 5.35 respectively (see Chart 2). The results show that 94% of the participants rated their capabilities in passive skill such as reading and listening as 4 or above (over 83% chose 5 or 6). 86% rated the writing skill of MSA which is used inside academic settings such as school and universities as 4 or above, and 73% of
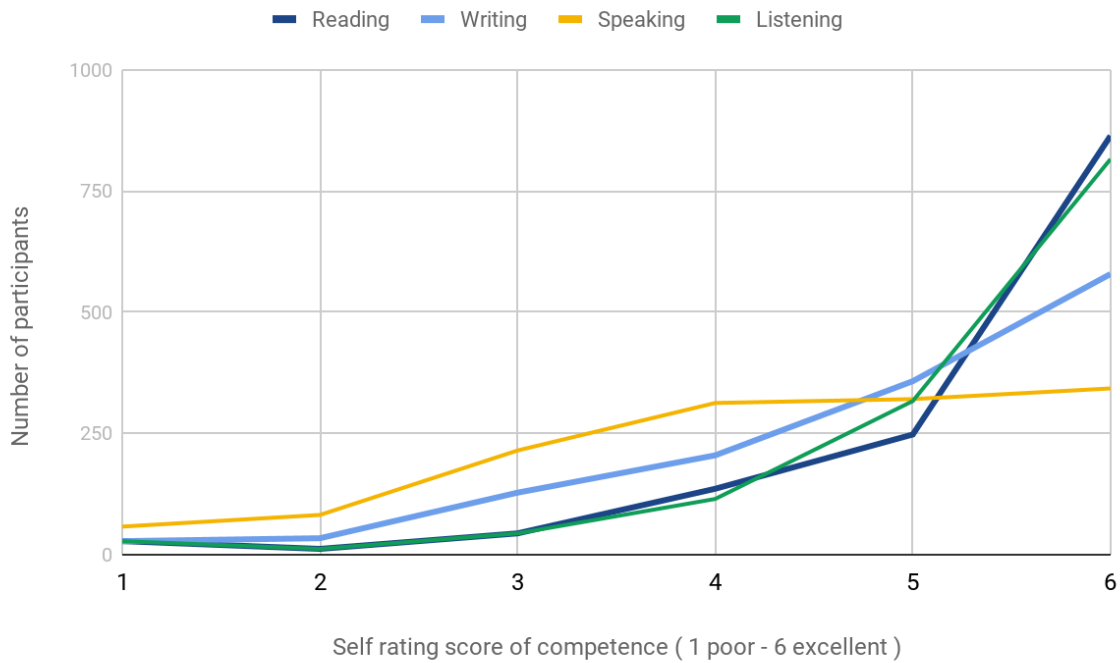
Chart 2: The figure shows the self-evaluating participants' proficiency in MSA of 4 skills: Reading, Writing, Speaking, and Listening.

participants rated their speaking skills in MSA as 4 or above. This indicates that speaking is the least comfortable skill in MSA for native speakers of Arabic.

2.3.1 Fill in the blank

The results of the first type of the fill-in-the-blank question, which is about the locative adverbs that are used for distal distance, showed that the majority of participants favored *hunaka* 'there' over *Hunalika* 'over there'. 1149 (86.26%) participants chose *hunaka* 'there' as the locative adverbs that is used for distal distances while only 28 participants (2.10%) choose

hunalika 'over there' as the locative adverb that is used for distal distance. 52 (3.90%)

participants choose both *hunaka* 'there' and *hunalika* 'over there' to refer to distal object, 5

(0.38%) participants chose *huna* 'here, and 98 participants choose irrelevant locative adverbs

(7.36%; see Chart 3).

Type of locative adverbs

● huna (here)   ● hunaka (there)   ● hunalika (over there)   ● Both   ● Other
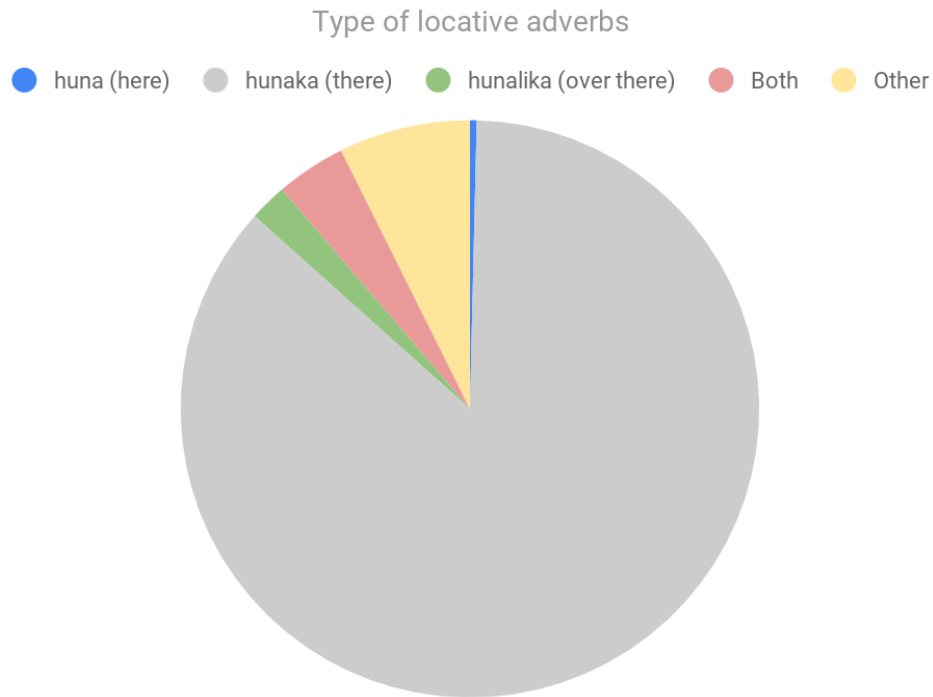
Chart 3: The overwhelming choice of hunalika (there) for the distal distance in
fill-in-the-blank questions.

The results of the second type of the fill-in-the-blank questions - which asked participants

to choose the suitable locative adverbs for referents based on an illustrative image - varied based

on the object distance relative to the character. The participants were asked about the following

objects: tree (located in a medial distance), house (relatively far distance), skyscraper (far

distance), hot air balloon (very far distance 'tangible'), and cloud (very far distance 'intangible').

For the tree object, 600 participants chose *huna* 'here', 277 participants chose *hunaka* 'there', 5

participants chose *hunalika* 'over there', and 450 participants fill in the blank with other options

to refer to the medial-distant object (e.g. *amam* 'in front of', *janb* '*next to*'). As for the other

four referents that are located in a far distance, the majority of the participants chose *hunaka*

'there' for all of them. 781 participants chose *hunaka* 'there' to refer to the house, 74 chose *huna*

'here', 40 chose *hunalika* 'over there', and 437 participants wrote other place indexicals. Similar

pattern was found when referring to skyscrapers where 826 participants chose *hunaka* 'there', 50

chose *huna* 'here', 73 chose *hunalika* 'over there', and 383 chose irrelevant options.
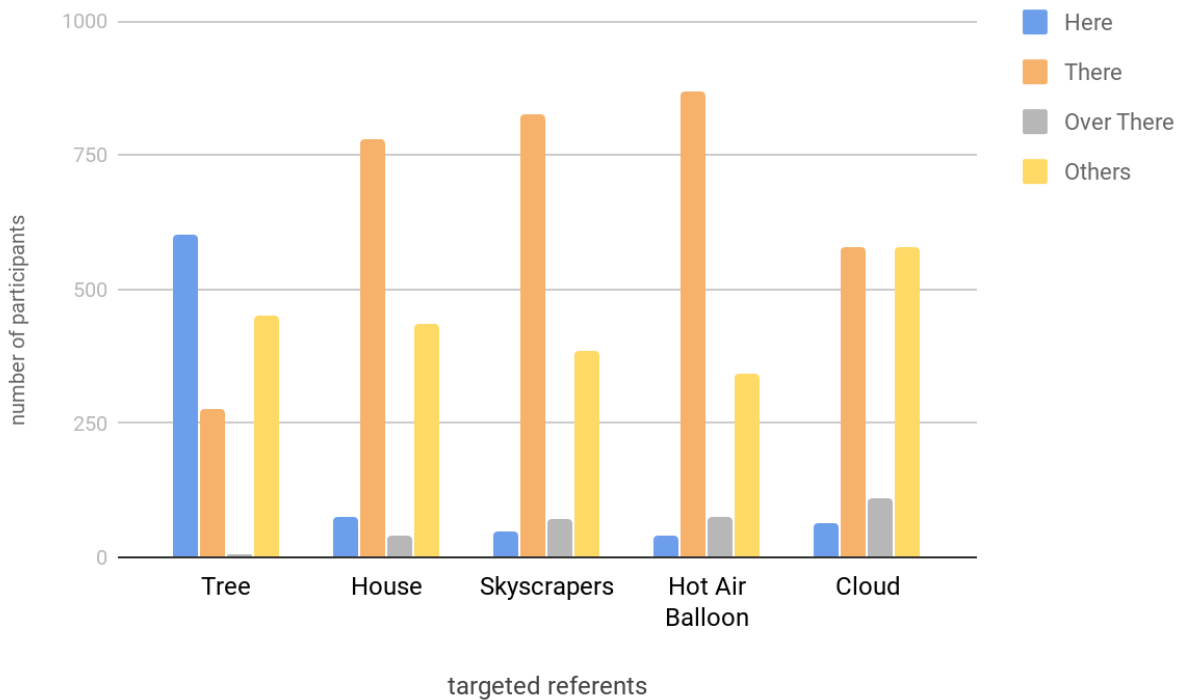
Chart 4: Participants' choice of locative adverbs based on referents at different distances.

As for the hot air balloon, 870 participants chose *hunaka* 'there', 42 participants chose *huna* 'here', 76 participants chose *hunalika* 'over there', and 344 preferred other expressions to refer to the referent. Lastly, 578 participants used *hunaka* 'there' to refer to the cloud (intangible), 64 participants used *huna* 'here', 111 others used *hunalika* 'over there', and 579 ones used other deictic expressions (see Chart 4 above; see Appendix 10 and 11 for more details).

2.3.2 Rating scale

      The rating scale questions asked participants to rate the locative adverbs based on their natural use where five represents the most natural use and one represents the least natural use. The illustrative image included five referents: chair (located in a proximal distance), tree (located in a medial distance), house (located relatively in a distal distance), airplane (tangible and located very far), and cloud (intangible and located very far). 1332 participants rated chair which is a proximal referent as 1.39 for *hunaka* 'there', and 1.37 for *hunalika* 'over there. There was no natural rating for the proximal referent 'chair' using *huna* 'here', because it was answered for the participants as an example to help them understand the task. The results of the rating scale questions have a similar pattern to fill-in-the-blank questions as the majority of participants favored *hunaka* 'there' over *hunalika* 'over there'. In rating scale questions, participants revealed their preference for *hunaka* 'there' by rating it as the most natural use for medial and distal referents. For the tree referent which is located in a medial distance, the use of *huna* 'here' was rated 2.95, *hunaka* 'there' was rated 3.87, and *hunalika* 'over there' was rated 3.15. The natural rating of deictic expressions referring to the house which is a distal referent showed that 1332 participants rated *huna* 'here' as 1.94, *hunaka* 'there', as 4.14, and *hunalika* 'over there' as 3.51.

The plane which is a distal referent was rated 1.80 for *huna* 'here', 4.16 for *hunaka* 'there', and 3.53 for *hunalika* 'over there'. Similar results were found for *cloud* where it was rated 1.98 for *huna* 'here', 3.95 for *hunaka* 'there', and 3.58 for *hunalika* 'over there' (see Chart 5).
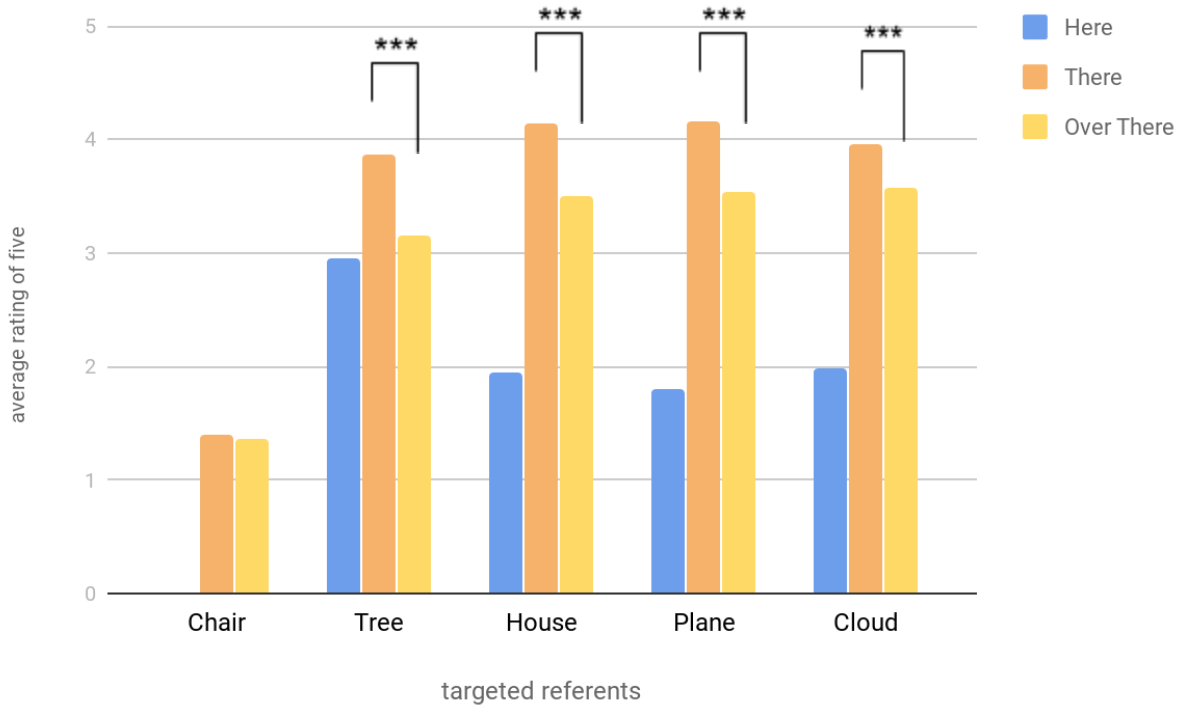
Chart 5: The difference of natural use (5 highest - 1 lowest) of three deictic expressions: huna (here), hunaka (hunaka), and hunalika (over there).

A two-way ANOVA was conducted to measure the difference in terms of natural use between place locative adverbs (*huna* 'here', *hunaka* 'there', and *hunalika* 'over there') and distances (proximal "chair", medial "tree", distal "house", very distal that is tangible "plane", and very distal that is intangible "cloud"), and a substantial significant difference was found

across all variables where all F's > 151, P's < .001. A large significant difference was also found between all distances represented by chair, tree, house, plane, and cloud (F (3, 3993) = 16.34, p < .001). The difference between all three place indexicals (*huna* 'here', *hunaka* 'there', and *hunalika* 'over there') was also significant (F (2, 2662) = 1348, p < .001). A significant correlation was also obtained between distances and locative adverbs where the disparity differs depending on distances (F (6, 7986) = 145.3, p < .001; see Table 5).

	Df	Sum Sq	Mean Sq	F value	P Value
	Subjects				
Residuals	1331	5727	4.303		
	Subjects:Distances				
Distances	3	68	22.790	16.34	1.48e-10 ***
Residuals	3993	5568	1.394		
	Subjects:Deictic Expressions				
Deictic_Expressions	2	9659	4829	1348	<2e16 ***
Residuals	2662	9537	4		
	Subjects:Distances:Deictic Expressions				
Distances: Deictic_Expressions	6	1283	213.79	145.3	<2e-16 ***
Residuals	7986	11748	1.47		

Table 5: A summary of the two-way ANOVA that shows the difference in terms of natural use between place locative adverbs (huna 'here', hunaka 'there', and hunalika 'over there') and distances (proximal "chair", medial "tree", distal "house", very distal that is tangible "plane", and very distal that is intangible "cloud").

A further statistical measurement was conducted to compare place locative adverbs to each other (*huna* 'here' vs. *hunaka* 'there'; *huna* 'here' vs. *hunalika* 'over there'; *hunaka* 'there

vs. *hunalika* 'over there'). A predictable large significant difference was found between *huna* 'here' and *hunaka* 'there' in all distances (proximal, medial, and distal) where *hunaka* 'there' was rated higher than *huna* 'here' for medial and distal referents (all F's > 277, all P's < .001). *hunalika* 'over there' was also rated higher than *huna* 'here' for medial and distal referents. The natural rating of *huna* 'here' versus *hunalika* 'over there' revealed a significant difference on the medial referent 'tree' (F (1, 1331) = 10.86, p = .001) and a substantial significant difference on all other distal referents (all F's > 740, all P's < .001). The difference in natural rating between *hunaka* 'there' versus *hunalika* 'over there' – which is related to the research question – was substantially significant for all distances where all F's > 44 and all P's < .001. The results revealed that *hunaka* 'there' was significantly rated higher than *hunalika* 'over there' for all medial and distal referents.

2.3.3 Open ended

The open-ended question asked participants directly about the difference between *hunaka* 'there' and *hunalika* 'over there'. Even though this question was optional to answer, the majority of participants 1284 (96.40%) answered the question. The answers for this question varied from one participant to another. Some participants seemed as if they felt compelled to write something, and they explicitly stated that they do not know the answer. Others similarly reported that there is no difference between the two locative adverbs. One participant stated that *hunalika* 'over there' does not have any meaning attached to it. Another one wrote a question, "what does *hunalika* 'over there' even mean?". A similar answer by another participant stated "*hunalika* 'over there' does not exist in Arabic". Most reported answers in this question were about the

difference between *hunalika* 'over there' and *hunaka* 'there' in terms of distance. These answers, however, will not be reported as they overlap with the answers of the multiple-choice question which is discussed in the next section.

2.3.4 Multiple choice

The last part of the survey asks participants - in a multiple-choice question - to choose the locative adverb that is used for the furthest distance. Three options are provided for the participants: *hunalika* 'over there', *hunaka* 'there', and 'equal'. 720 participants chose *hunalika* 'over there' as the locative adverb that is used for the furthest distance, 494 participants chose *hunaka* 'there', and 118 participants thought that they are equally used (see Chart 6).
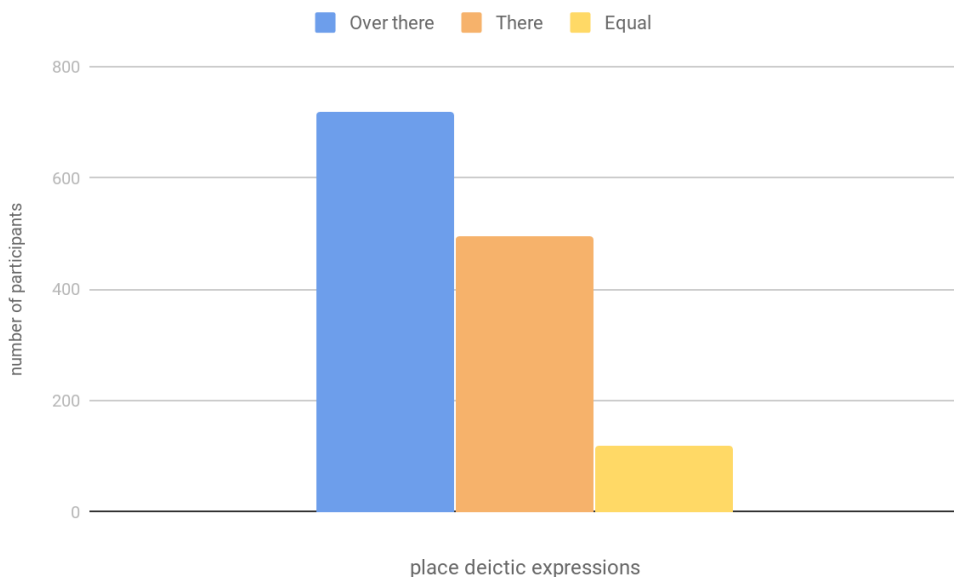
Chart 6: The choice of locative adverb that is used for the furthest distance.

2.4 Discussion

The aim of the current chapter is to examine the place indexicals in Modern Standard Arabic in order to determine the dimensional system of place deixis in MSA. To do that, the study used the judgment of native speakers of Arabic on place deictic expressions using Qualtrics surveys. This advanced survey helped examine a variety of situations that required native speakers of Arabic to use place deictic expressions, which helped understand how these indexicals are perceived. Alluhaybi (2015) concluded in a pilot study that the use of distal deictic reference *hunalika* "over there" in Modern Standard Arabic is decreasing, and heading to a similar situation to what is found in English with the deictic expression "yonder". The current study examined this claim with 1332 native speakers of Arabic who expressed their judgment of the place deictic expressions in Modern Standard Arabic, and found that *hunaka* 'there' is indeed dominating the use of place indexicals for medial and distal referents.

The majority of the participants in the current study came from the same country (90.09%), grew up in cities that share the same culture, and spoke similar dialects. This is important because it helps minimize any effect of a variety of spoken dialects. The results of the self-evaluation of MSA competence reveal how native Arabic speakers use MSA. Native Arabic speakers deal with MSA on a daily basis as they hear it in the news, serious TV talks, lectures, speeches, and even children cartoons. Therefore, the score of the listening skill of native Arabic speaker is very high. The reading skill is similar to the listening skill as MSA is printed on newspapers, books, magazines, and found in any formal settings such as school instructions, university textbooks and laws. This indicates that native Arabic speakers are very familiar with passive skill (listening and reading) that does not require them to produce any output in MSA.

Native Arabic speakers are also familiar with writing – to some extent – in MSA, but it is less common than listening and reading. This is true especially in school, where assignments and research papers are expected to be written in MSA. Speaking, however, is the least used skill as it is not required even in school. Speaking in MSA may be important when someone is giving a formal speech, reading the news or interviewed on a serious TV talk. These scenarios are not common for the average native speaker of Arabic. The results of the self-elevation skills of MSA for listening, reading, writing, and speaking – which are 5.37, 5.35, 4.93, and 4.34 out of 6 respectively – truly reflects the actual use of MSA by native Arabic speakers.

2.4.1 The participants' preference of place indexicals

The first type of fill-in-the-blank question tested the general knowledge of native Arabic speakers of the use of distal place deictics. This question asks participants to fill-in-the-blank the place deictic expression that is used for distal distances, and participants are given the option to write more than one expression. This question provides an opportunity to understand how native speakers of Arabic think about distal distance, and the expressions that represent it in MSA. In Classical Arabic, *hunaka* 'there' is used for medial distance, while *hunalika* 'over there' is used for distal distance. If the system of MSA is similar to Classical Arabic, participants would write *hunalika* 'over there' to represent the deictic expressions that are used distal distance because the question did not ask about the proximal or medial distance. However, 1149 of the participants (86.26%) choose the medial expression *hunaka* 'there' to be the deictic expression that is used for distal referents. This suggests that participants believe that *hunaka* 'there' can be used for both medial and distal referents. As shown in the results section, 52 participants (3.90%)

reported both place deictic expressions (*hunaka* 'there' and *hunalika* 'over there') which mean that those participants believed that both expressions are plausible candidates to be used to indicate distal referents. Only 28 of the participants (2.10%) reported that *hunalika* 'over there' should be used for distal distance. These results indicate that the use of *hunaka* 'there' and *hunalika* 'over there' are overlapping, and both of them – based on the participants' view – are capable of describing the distal distance. It also clearly shows that *hunaka* 'there' is dominating *hunalika* 'over there' in terms of use, as the majority of the participants chose it to indicate distal referents.

The second type of fill-in-the-blank – which is based on illustrative images – examined the participants' use of locative adverbs for a variety of referents that are located at different distances. The first illustrative image included three referents: proximal (chair), distal (skyscrapers**)** and very distal (hot air balloon) referents. The answer to the proximal referent is provided for the participants to help them grasp the task. 826 participants (62.11%) used *hunaka* 'there' to refer to a distal referent (skyscrapers) compared to only 73 participants (5.49%) who chose *hunalika* 'over there'. The rest of the answers are irrelevant to the research question. The preference of the medial locative adverb was even more evident when the referent is further. In the third blank, the participants are asked to refer to the furthest referent (hot air balloon) in the same illustrative image, and are not expected to use the same locative adverb that they use in the second blank which is *hunaka* 'there'. It was designed to elicit the use of locative adverb *hunalika* 'over there' that is used in Classical Arabic for distal items. The hot air balloon referent gave participants an opportunity to think about a locative adverb that is used for the furthest distance in order not to fill-in two blanks with the same answer. Even though participants are

given two items with different degrees of distal distance, 870 participants (65.41%) preferred the same locative adverb *hunaka* 'there' to describe the very far referent (hot air balloon) compared to only 76 participants (5.71%). This means that roughly 50% of the participants wrote the same answer in two blanks which indicates that they ran out of options, and chose the only possible place indexical that they can think of. The results of this question are in line with Alluhaybi (2015) argument that the use of *hunalika* 'over there' is decreasing. It seems that the distal distance is on the way to being subsumed by the medial deictic expression *hunaka* 'there'.

A similar pattern was found in the second question of the fill in the blank in which the majority of participants chose *hunaka* 'there' for distal (house) and very distal (cloud) referents. 781 participants (58.63%) chose *hunaka* 'there' for distal referent compared to only 40 participants (3.00%) chose *hunalika* 'over there', 578 participants (43.39%) chose *hunaka* 'there' for the very distal referent compared to 111 participants (8.33%) *hunalika* 'over there'. These results show a clear preference for the medial deictic expression *hunaka* 'there' over *hunalika* 'over there' as it was preferred by the majority of participants in all cases. It was chosen for referents that are far, but on the ground (e.g. skyscrapers and house); for a referent that is very far in the sky, but tangible (e.g. hot air balloon); and for a referent that is extremely far, and intangible (e.g. cloud). This reveals an apparent shift in the preference and use in Modern Standard Arabic of place indexicals. As for the *tree* which is located in a medial distance, 600 participants (45.05%) chose *huna* 'here', 277 participants (20.80%) chose *hunaka* 'there', and 5 participants (0.38%) chose *hunalika* 'over there'. The split in preference for the deictic expression in this question seems to be related to the estimation of distance by the participants. Some participants estimated that the referent is close enough for the proximal expression *huna*

'here' to be chosen, while others estimated the distance to be medial, and resorted to the medial expression *hunaka* 'there'. What is clear is that *hunalika* 'over there' – which was chosen 0.38% – is not preferable in medial nor distal distances.

2.4.2 The natural rating scale of place indexicals

The fill-in-the-blank questions revealed the preference of participants when locating medial and distal referents. The choice of *hunalika* 'over there' did not reach 9% when locating distal referents in any location, and it was as low as 3% in some answers. The rating scale question, on the other hand, forced participants to be conscious about *hunalika* 'over there' and *hunaka* 'there', and made them rate their naturality in certain contexts in order to measure the acceptance rate of these deictic expressions. As stated in the results section, *hunaka* 'there' was rated significantly higher than *hunalika* 'over there' for all referents. This question included three distal referents (house, plane, and cloud) that traditionally were referred to using *hunalika* 'over there' in classical Arabic as the most natural approach, however, the natural acceptance rate in Modern Standard Arabic was different.

The results of this question are important because they show that the choice of *hunaka* 'there' over *hunalika* 'over there' is not only a matter of preference, rather, it shows that the natural use and acceptance of *hunalika* 'over there' for distal referents is decreasing in all levels compared to *hunaka* 'there' in Modern Standard Arabic. The majority of participants still hold a clear understanding that *hunalika* 'over there' is not being used for proximal referents. When the participants were asked to rate the natural use of *hunalika* 'over there' to locate a proximal referent, it was rated only 1.37 out of 5 (minimum score is 1.00), which is even lower than what

hunaka 'there' was rated for the same referent which is 1.39 out of 5. However, participants do not seem either to like the use of this locative adverb in general, as it was rated significantly lower for all distal referents with a score of 3.51, 3.53, and 3.58 compared to 4.14, 4.16, 3.95 of natural rating of *hunaka* 'there' for the same distal referents. It seems that the use of this deictic expression (*hunalika* 'over there') is confusing for the majority of participants, therefore, they did not choose it in the fill-in-the-blank questions, and when they had to deal with it in the rating scale question, the confusion was reflected on the natural rating of this deictic expression.

2.4.3 The distance of place indexicals

The results of the open-ended question – which asked participants to write the difference between *hunaka* 'there' and *hunalika* 'over there' in general – revealed part of the confusion that some of the participants had. As shown in the result section, some of the participants in this question showed a lack of comprehension of the use of this deictic expression as expressed by one participant who wrote "what does *hunalika* 'over there' even mean?" or another who stated "*hunalika* 'over there' does not exist in Arabic"! This lack of comprehension is a result of the low use of this deictic expression as shown in the results of fill-in-the-blank questions.

The multiple-choice question – which is the final question in the survey – asked participants directly about the difference between *hunaka* 'there' and *hunalika* 'over there' in terms of distance, and asked them to choose the place deictic expression that refers to the furthest distance. The answers to this question shed light on part of the research question concerning the dimensional system of place deictic expressions in Modern Standard Arabic as it was assessed by native speakers of Arabic. As stated in the results section, the participants had three options:

hunalika 'over there', *hunaka* 'there', and a third option that was provided for participants who do not see a difference which is 'equal' (i.e. both place locative adverbs refer to equal distances). When the participants were faced with specific choices, 54.05% (720 participants) chose the distal locative adverb *hunalika* 'over there', and more than third 37.09% (494 participants) chose the medial locative adverb as the right deictic expression to signal the furthest referents. 118 (8.86%) thought that both deictic expressions can be used to indicate the same distances. These results revealed that nearly half of the participants think that the medial expression can be used to represent the furthest referent.

2.5 Conclusion

The present chapter investigated the dimensional system of MSA using survey questions that examined the use of locative adverbs by native speakers of Arabic. The survey questions covered three main aspect of the use of place deictic expressions by native speakers of Arabic: (1) the preference of the participants for place deictic expressions as was shown by the fill-in-the-blank questions, (2) the acceptance rate of the participants for the locative adverbs as shown by the rating scale questions of natural use of deictic expressions, and finally (3) the distance that each place deictic expression represent as discussed by the multiple-choice question. The findings of the survey question revealed three main results: (1) The preference for the medial deictic expression *hunaka* 'there' is overwhelmingly higher than the preference for the distal deictic expression *hunalika* 'over there', (2) the acceptance rate of the distal deictic expression is decreasing over time, and finally (3), the majority of the participants still recognize

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the distal deictic expression as a locative adverb that is not used for proximal referents, and roughly 54.05% correctly recognize that the distal deictic expression is used for the furthest referents compared to the medial deictic expression *hunaka* 'there'. In general, based on the survey results, it seems that the majority of the native Arabic speakers are unconscious of the distance distinction between the medial and distal deictic expression, and they tend to resort to the one that they are more comfortable with; that is the medial deictic expression *hunaka* 'there'.

This chapter discussed the use of place deictic expression based on space and physical distance, and found that proximal and distal distances are substantial in determining the use of place deictic expressions. However, the distinction between the medial and distal expressions are not clearly defined, and physical distance may not be the best indicator of the use in Modern Standard Arabic. Therefore, this choice of forms is addressed in coming chapters which examine other factors that could influence the choice of place deictics in Modern Standard Arabic besides distance. Chapter 3 is going to discuss the factor of visibility and its influence on the choice of deictic expressions especially in non-proximal environments. It examines both full and partial invisibility, and compares it to full visibility using different ranges of distances. Then Chapter 4 examines the last factor that could influence the choice of space deictic expression, which is contact and control. The items that can be touched or controlled – while still being relatively far – using a long stick or a rope are going to be discussed and analyzed to determine the context in which each of these factors are used.

Chapter 3

Experiment 2

The effect of visibility

3.1 Introduction

The previous chapter discussed the traditional factor that controls the choice of place

deictic expressions on Modern Standard Arabic (MSA), which is distance. Distance, which refers

to the amount of space between a referent and a speaker in a speech event, is a common factor

and found almost in all languages including English, French, Spanish, Chinese, and others.

Classical Arabic, which is the parent of MSA has three spatial deictic expressions which are

distance oriented: *huna* (here) for close referents, *hunaka* (there) for medial referents, and

hunalika (over there) for distal referents. The previous chapter examined the effect of distance on

the choice of participants of these three deictic expressions, and found that distance play an

important role on the choice of proximal versus medial/distal referents, however, the effect of

distance on the choice of medial versus distal is not significant. Rather, the results revealed that

participants preferred the medial expression (*hunaka*) over the distal expression (*hunalika*) even

for distal referents. It seems that *hunalika* (over there) is not used as much compared to *huna*

(here) and *hunaka* (there).

This chapter introduces the effect of visibility on the choice of participants, and compares

it and contrasts it with the traditional factor distance. Visibility refers to the state of a

speaker/hearer being able to see a referent during the speech event. This factor is found in many

languages including Malagas, Chadic, Yupik, Daga, Mayan, Hausa, Yidin, and others. The

visibility factor can vary between referents, but it typically has three types: 1) clearly visible, 2) partially visible, and 3) invisible. Producing one type or another relies on the judgments of the speaker during the discourse with the interlocutors. This chapter examines the three types, and toggle each type through different distances to establish the hierarchy of factors that determine the choice of place deictics in MSA.

The conducted experiment in this chapter uses a series of pictures that have multiple referents that are located on different distances, and ask participants to locate these referents, and use the suitable locative adverbs. In order to determine the suitable set of pictures, a pre-test was conducted to find the clearest pictures in terms of referents and distances, and subsequently, to remove confusing and unclear pictures from the main experiment. The following section lays out the material section which starts with the details of the pre-test that was conducted before starting the main study.

3.2 Methodology

3.2.1 Materials

In order to ensure the clarity of materials to all participants in the main study, a pre-test experiment was conducted to filter pictures that may look ambiguous or vague to users, particularly in terms of distance. The following section illustrates how the pre-test experiment was conducted before carrying out the main experiment.

3.2.1.1 Pre-Test experiment

The pre-test included 24 different pictures that had 53 different referents that are located on a variety of distances. 72 subjects voluntarily participated and completed all the questions of

the survey. The data collection is conducted using Qualtrics survey by using a series of

multiple-choice questions. Each one of these questions has one picture that has either one or

multiple referents, and a character that is located at the bottom of the picture. The subjects are

asked to give an estimation of the distance between the character and the referents by choosing

one of five multiple choices to describe the distance (very close, close, medial distance, far, and

very far). The results that included unbalanced results (e.g. the distal choices and the proximal

choices got similar results) for the same referent got excluded from the main experiment.

Figure 6: Example of two representative pictures that were used in the pre-test.
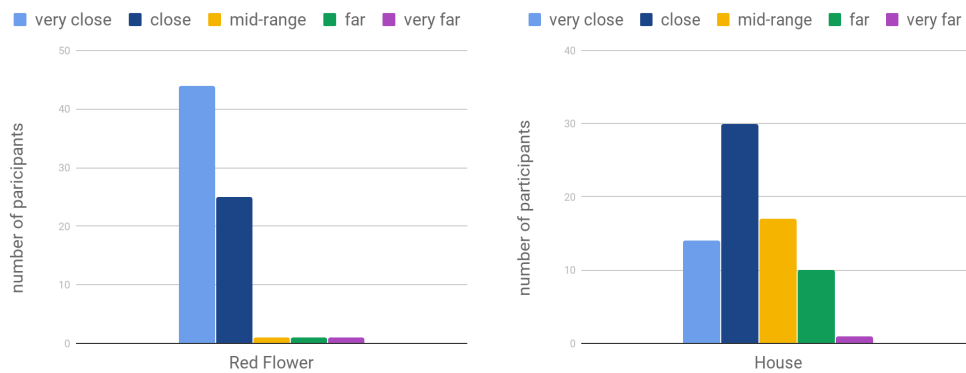
Chart 7: Two charts represent the results of the two images above that were used in the
pre-test.

Figure 6 shows two examples of pictures that were used in the pre-test. The picture to the right requests subjects to categorize the distance between the character located at the right bottom of the picture and a referent, which is in this example a red tree. The majority of the subjects (n=44, 61%) chose "very close" to represent the distance followed by the distance "close" which is chosen 35% of the time (see Chart 7). Based on the participants choice, the referent is clearly perceived as a referent that is located in the proximal range. Therefore, this referent is included in the main experiment. On the other hand, the picture to the right in Figure 6 displays a house [2] that is located next to a striped grass as a referent and a character that is located at the lower side of the picture. Participants are asked to identify the distance between the referent and the character. 30 participants chose the distance "close", followed by 17 for "mid-range", 14 for "very close", and 10 for "far". The distance between the character and the referent does not seem to be clearly defined as shown by the unbalanced results. Thus, this picture is excluded from the main experiment. The results of the pre-test helped the author identify the clear referents which subsequently helped design the main experiment.

3.2.1.2 Main experiment

The main experiment was conducted using a Qualtrics survey, and was designed to stimulate the use of the space deictic expressions in Modern Standard Arabic. It examines the use of locative adverbs *huna* (here), *hunaka* (there), and *hunalika* (over there) with referents that are located in visible and invisible environments. The instructions and the questions of the surveys are written in MSA, and participants are requested to write their answers in MSA. The

experiment included 40 questions, 9 of them are background questions, 22 are fill-in-the-blank questions, and 18 are rating scale questions.

3.2.1.2.1 Background questions

Similar to the experiment that is conducted in Chapter 2, the first section of the survey is designed to collect data about the subjects' background, age, education level, country, city they grew up in, and the dialect they spoke at home. It also included questions about the MSA fluency of the participants, the age they learned MSA, and concluded by self-evaluation of the participants current level in MSA in four skills: writing, reading, speaking, and listening. The format of the questions that are used in this section are either multiple-choice or fill-in-the-blank questions.

This section is included to understand the participants choice, background, and level, and subsequently to examine whether or not some of these factors affected the participants' overall choices. Some of the questions are used as a filter to exclude unqualified subjects. For example, participants who reported that their age is younger than 18 are excluded from the experiment.

3.2.1.2.2 Fill-in-the-blank questions

The second section of the survey used fill-in-the-blank questions to ask participants about different pictures. Each picture has a character that is typically located at the bottom of the image and referents that are scattered in the scene . The character – who does not face the camera – looks directly towards the referents, and the participants are asked to evaluate the distance between the character and the referent and write the suitable locative adverb that should be used

if the character wants to describe the referents location. The participants have to imagine a situation where the character would indicate the location of the referents by using deictic expressions. For example, if the picture has a house as a referent, the fill in the blank question would be written as the following:

[1] The house is ……….

Figure 7: Participants are asked to write the suitable locative adverb of referent [1] relative to the viewpoint of the character at the bottom.

The participants are asked to fill in the blank with a deictic expression that is appropriate which is typically locative adverbs such as *huna* (here), *hunaka* (there), and *hunalika* (over there). However, the participants are given the freedom to express their preference, and not forced to use specific types of deictic expressions.

This section has 13 distinct pictures, 9 pictures have pairs, and 4 proximal pictures without pairs making the total 22 pictures. The paired pictures are shown twice to the

participants: one with referents being visible, and others with the targeted referent being

invisible/partially visible (see Figure 8 as an example).

Figure 8: An example of visible and invisible referent of fill-in-the-blank questions in

two side-by-side pictures.

In figure 8, participants are asked to write the suitable locative adverb of referent [1] relative to

the viewpoint of the character at the bottom. Please note that each picture of the ones above are

shown in an independent question. Throughout the survey, each picture in this section is shown

independently in a separate question, and participants are expected to fill in the blanks of each

referent before moving to the next picture.

3.2.1.2.3 Rating scale questions

The final section of the survey seeks to understand how participants perceive the use of

locative adverbs in MSA in visible and invisible environments. It shows participants pictures of a

character and referents similar to the previous section, however, in this section, a completed

sentence is presented to the user below each picture, and s/he is asked to rate the natural use of

locative adverbs. Participants are given a scale of 1-5, and asked to rate the sentence 5/5 if it is

the most natural way to use the included locative adverb, and 1/5 if it is the least natural way to

use the included locative adverb.

Figure 9: An example of a picture that involves two referents: house and stairs for natural
rating scale questions.

For example, in figure 9, participants are given a sentence such as: [1] The house is over there, and

asked to rate the use of *over there* based on the distance between the character and the house. In

the example above, *over there* should not be the most natural thing to use to describe a medial

distance because it is typically associated with distal distances. Each picture is shown to the

participants 3 times, each with a sentence that has a different locative adverb. The example above

is shown again with the proximal locative adverb *here*, and another time with *there*. This means

that each picture is presented in 3 separate questions, and each one of these questions carries a

different place deictic expression. The picture shown in Chart 16 has a pair in which the house is

nearly invisible and participants are given the same procedures as the one with clearly visible

referents. All sentences are presented in MSA, and the targeted locative adverbs are *huna* (here),

hunaka (there), and *hunalika* (over there). The average of participants' rating is collected in order

to understand how users of MSA perceive the use of locative adverbs when being visible and

invisible across different distances.

3.2.2 Participants

The survey had 1078 subjects who participated voluntarily and completed all questions of

the survey. All subjects are native speakers of Arabic who are at least 18 years old. 49% of

participants are between 18 to 24 years old which equals 527 participants. 297 participants are

25-30 years old, 183 participants are 31-40 years old, 68 participants are between 41 to 60 years

old, and only 3 subjects older than 60 years old. The majority of participants (88%) have at least

high school diploma as 59 subjects reported they have master's or doctorate's degree, and 542

participants (50%) have bachelor's degree, and 349 subjects (32%) reported they have bachelor's

degree. The rest of the participants (128, 12%) reported that they have either a degree less than

high school (51), did not complete school due to some circumstances (41), or choose not to

report (36) in this section (see Appendix Exp 2 Q2 for more details).

Most participants (708, 66%) reported Saudi Arabia as being their country compared to

125 who reported Iraq, 28 reported Egypt, 24 reported Kuwait, 22 reported Yemen, 20 reported

United Arab Emirates, and 151 reported other countries. The most frequently listed city is

Riyadh (211, 20%) which is the capital of Saudi Arabia and located in the central region,

followed by Jeddah (76), which is located in the western region of Saudi Arabia, followed by

Qassim (55) which is also located in the central region of Saudi Arabia, followed by Baghdad (48) which is located in the central region of Iraq, followed by Mecca (47), Madina (30), Ahsa (25), Dammam (25), Abha (24), and others which mostly located in Saudi Arabia.

The most spoken Dialect of participants in the survey is Najdi dialect (332, 31%) which is the dialect of the central region of Saudi Arabia, followed by Hijazi dialect (181, 17%) which is the dialect of the western region of Saudi Arabia, followed by Jonobi dialect (94, 9%) which is the dialect of the southern region of Saudi Arabia, followed by Iraqi dialect (29) which is the dialect of Iraq, followed by Shamali (23), Shargawi (22), Qassimi (19), Kuwaiti (18), Yemini (18) and at least 30 others that naming convention made them harder to count (see Chart 8).
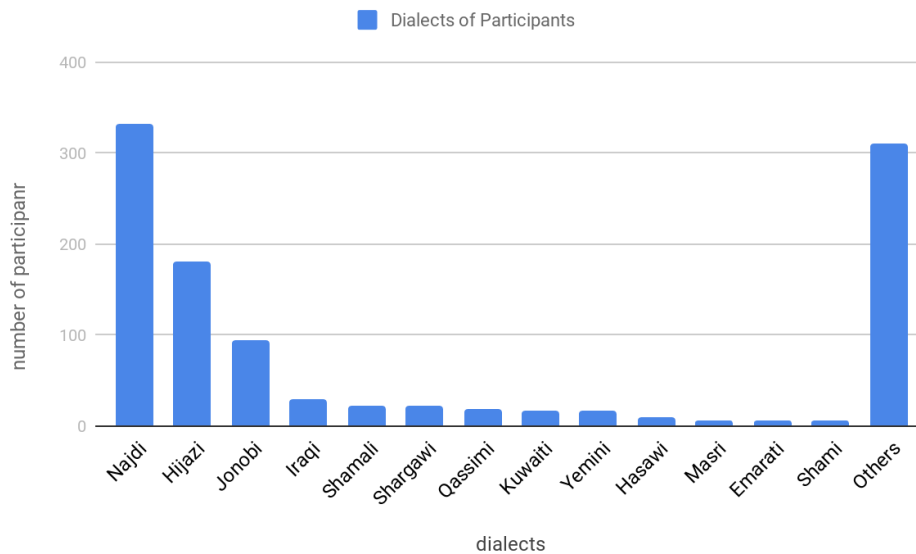
Chart 8: The variety of dialects reported in the survey by subjects.

Chart 8 above, shows the variation of the participating dialects in the blue bar, and illustrates how the dialects of Najdi, Hijazi, and Jonobi are among the most common ones in the survey.

The survey also extracted data about the participants' MSA competence. 99 participants reported that the age they learned MSA is 2-3 years old. 177 stated that they acquired MSA between 4 and 5 years old, 302 subjects said they learned MSA at 6-7 years old, 191 reported the age as 8-10 years old, 114 stated their age when acquiring MSA is 11-12, and the rest (195) said they learned MSA after 13 years old. As for when they learned Arabic, 301 subjects said they learned Arabic before school, 480 reported they acquired Arabic in the elementary school while 159 stated that they learned Arabic in the intermediate school, and the rest (138) reported learning Arabic after that.

The participants were asked to self-rate their current competence in MSA, and they were asked to rate this based on four main skills: writing, reading, speaking, and listening.
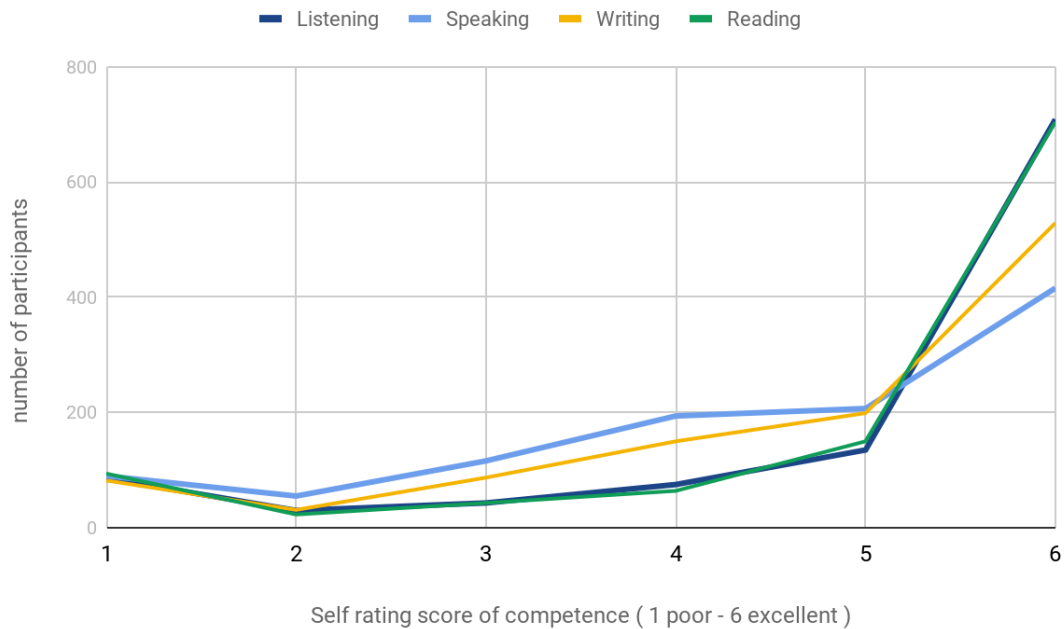
Chart 9: The results of self-rating of participants' competence in MSA in four skills: reading, writing, speaking, and listening.

The maximum rating is 6 which indicates the highest level of competence, and 1 which indicates

the lowest level of competence. In the input skill (reading and listening), the average self-rating

of the reading skill of all participants is 5.10 (SD: 1.56, V: 2.45). As for listening, participants

rated their skill as 5.11 average (SD 1.55, V: 2.40). As for the output skills (writing and

speaking), the average rating for writing is 4.80 (SD: 155, V: 2.39) while the average rating for

speaking is 4.50 (SD: 1.60, V: 2.54; see Chart 9).

3.2.3 Procedure

The experiment is conducted online using a Qualtrics survey, and all subjects participated

and completed all questions of the survey. Any subject who did not complete all the questions of

the survey was excluded automatically from the results. The procedures that are employed in this

experiment are similar to the one used in the previous experiment (for a detailed account of the

procedure, please refer to Experiment 1 in Chapter 2). All subjects are naïve to the purpose of the

experiment. The subjects are recruited online using social media and invited to participate in the

survey using a link that takes them to Qualtrics website in which they are introduced to the

instructions and the chance to agree to take part in the experiment. When participants agree to

the terms, they can proceed to the detailed instruction page. Participants cannot proceed without

agreeing to the terms, which details their rights and benefits of the survey. In the terms,

participants are informed about 1) the expected time to finish the survey, 2) the contact number

and the email if they have any issues, 3) the gathered data related to their privacy, 4) their right to

withdraw at any time, and are 5) given a general idea about the experiment, and the data that are collected.

The survey is designed to direct users to the next steps by providing clear instructions before each question. All instructions are written in MSA, and participants are asked to use only MSA. To prevent any confusion of the use of MSA, a definition and examples of MSA is provided to the subjects to avoid confusion with Classical Arabic or other dialects. Each question is presented in an independent page, and contains one picture to help users focus on the task. A progress bar is presented at the top of the survey to help users track their progress, and monitor the percentage of completion. Some fillers are included to distract users about the purpose of the survey.

The survey provides only the *Next* button, and does not show the *Back* button, i.e. users cannot go back and change their answers. As the survey progresses across different types of evaluation, it starts to reveal more of the purpose of the study toward the end. Thus, hiding the *Back* button is implemented to help minimize unnecessary changes, and to protect the original answers. The survey takes users approximately 18 minutes to finish the survey, and it uses small files named *Cookies* which is a browser technology that is used to recognize users' computers which allow them to stop the survey at any time, and finish it later within one week.

The survey included 40 targeted questions of which 22 are fill-in-the-blank questions and 18 are rating scale questions. The fill in the blank questions have 9 pairs (18 total), and 4 non-paired pictures. Each one of the 22 fill-in-the-blank questions is presented in an independent page to help users focus on the task. For example, pictures that have pairs where referents are visible in one, and (partially) invisible in another are shown to participants in two different questions. However, in this section where the results are discussed, all results of paired images are grouped and reported together, while being independent in the survey. The results of fill-in-the-blank questions are categorized into three categories: distal, medial, and proximal.

3.3.1 Distal Distance in fill-in-the-blank questions

The survey included 5 paired pictures that targeted distal referents in 10 separate questions. Each one of these pictures has one referent with the exception of the first paired picture, which has 2 distal referents. The 5 paired pictures have 6 referents which are *house*, *airplane*, *mansion*, *small house*, *hot air balloon*, and *large house*, and each one of these referents is shown two times: visible and invisible.
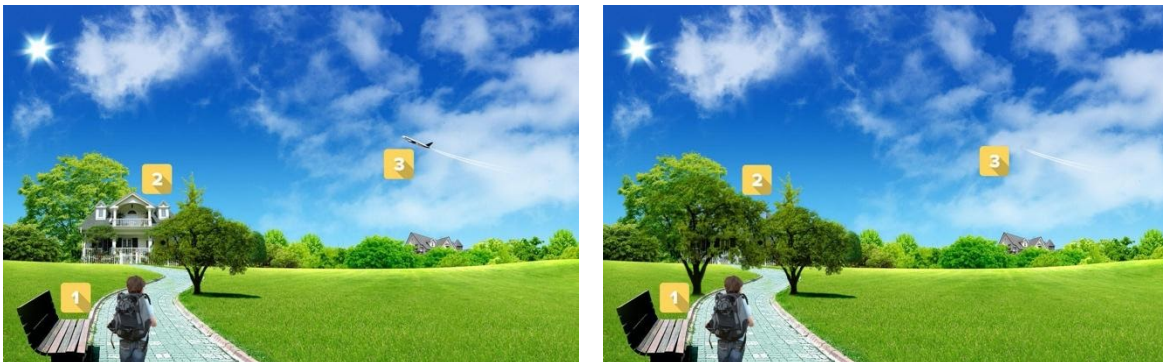
Figure 10: An example of two visible and two invisible referents: house and airplane

In the pair of figures above, which has two visible and two invisible referents: *house* and *airplane*, participants - in the visible condition - used *huna* (here) to refer to the *house* 88 times, *hunaka* (there) was used 476 times, *hunalika* (over there) was used 12 times, and the rest (502) used different expressions. When the *house* was invisible, 27 participants used *huna* (here), and 315 wrote *hunaka* (there), 31 preferred *hunalika* (over there), and 705 chose different answers. As for the *airplane*, 72 of subjects used *huna* (here), 283 wrote *hunalika* (there), 58 used *hunalika* (over there), and 665 wrote other answers in visible condition. When the referent (airplane) is invisible, 22 participants wrote *huna* (here), 224 used *hunaka* (there), 47 preferred *hunalika* (over there), and 785 decided to fill-in the blank with other answers. The summary of these results is shown in Chart 10.
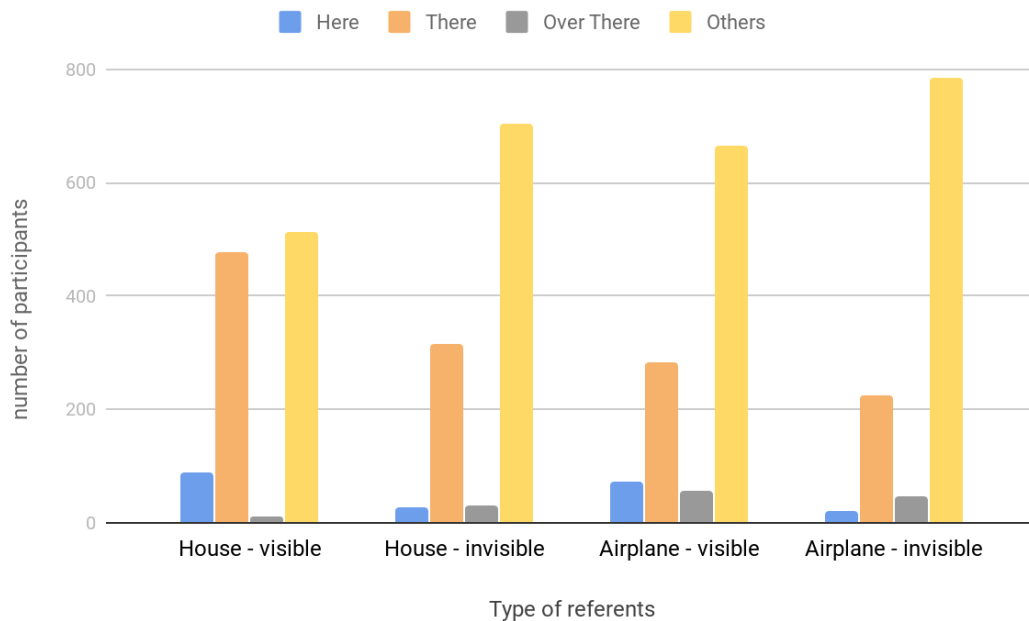
Chart 10: The results of the house and airplane in visible and invisible condition.

The blue bar, in the chart above, represents the proximal locative adverb huna (here), the red represents hunaka (there), the gray represents hunalika (over there), and the yellow represents other choices.

As for the *mansion* referent, 28 participants wrote *huna* (here) when the referent is visible, 357 preferred *hunaka* (there), 63 used *hunalika* (over there), and the rest chose different expressions. When the same referent is invisible, 26 participants chose *huna* (here), 344 participants used *hunaka* (there), 57 participants preferred *hunalika* (over there), and 651 decided to write different options (see Figure 11 as an example).

Figure 11: An example of two separate questions using the mansion referent in two different conditions.

In Figure 11 above, the mansion in the picture to the left is considered distal and visible while the mansion of the picture to the right is considered distal and invisible.

As for the *small house* referent, 23 participants wrote *huna* (here) to describe the distance between the visible house and the character, 352 preferred *hunaka* (there), 34 chose *hunalika*

(over there), and 669 chose different options. When the same referent is invisible, *huna* (here) is used by 28 participants, *hunaka* (there) is preferred 284 times, *hunalika* (over there) is favored 41 times, and 725 subjects preferred different answers. As for the distal *hot air balloon*, 22 participants chose *huna* (here) in the visible condition, 260 subjects favored *hunaka* (there), 39 participants used *hunalika* (over there), and the rest (757 subjects) preferred different expressions. When the same referent is used in the invisible condition, 23 used *huna* (here) to indicate the distance, 246 used *hunaka* (there), 46 preferred *hunalika* (over there), and 763 decided to fill in the blank with different terms.

Finally, the deictic expression *huna* (here) is used 52 to refer to the visible *large house*, while the *hunaka* (there) is used 331 times. As for *hunalika* (over there), it was used 24 times, and 671 used different answers. When the *large house* is invisible, 25 subjects used *huna* (here) to indicate the distance. 310 participants favored *hunaka* (there), and 32 preferred *hunalika* (over there). The remaining participants (711) filled in the blank with different expressions.

3.3.2 Medial Distance in fill-in-the-blank questions

The survey included 4 paired pictures that targeted medial distance in 8 questions. Each one of these pictures included one referent, making the total 4 different referents that are shown in two conditions: visible and invisible. The medial-distance referents are *wooden fence*, *left house, green chair*, and *house*. To refer to the visible *wooden fence*, participants used *huna* (here) 135 times, *hunaka* (there) 214 times, *hunalika* (over there) 5 times, and other expressions in 724 times. When the *wooden fence* is invisible, participants preferred *huna* (here) 95 times, *hunaka* (there) 222 times, *hunalika* (over there) 9 times, and different words 752 times (see Table 6).
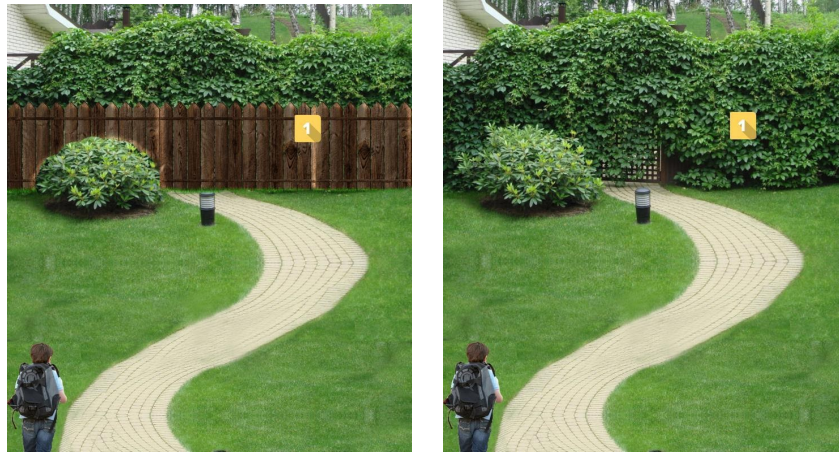
Figure 12: An example of two separate questions using different visibility status of the same referent.

	Wooden Fence - Visible	Wooden Fence - Invisible
Here	135	95
There	214	222
Over There	5	9
Others	724	752
Total	1078	1078

Table 6: A summary of the choice of place deictic expressions for the wooden fence referent.

In Figure 12, the wooden fence in the picture to the left is considered medial distance and visible while the wooden fence of the picture to the right is considered medial and invisible. The results for the left house referent, shown in Table 6, reveals that participants preferred huna (here) 57 times, hunaka (there) 349 times, hunalika (over there) 20 times, and other expressions 652 times. When the *left house* is invisible, 47 participants used *huna* (here) to indicate the distance, 292

favored *hunaka* (there), 18 preferred *hunalika* (over there), 92 chose a new deictic expression

which is *khalfa* (behind), and the rest (626) decided to choose different expressions.

On the other hand, the *green chair* referent, which is located in a medial distance relative

to the character (see Appendix Exp2 Q24 for relative picture pairs), 39 subjects used *huna* (here)

when the condition is visible, 385 participants wrote *hunaka* (there), 8 participants preferred

hunalika (over there), and the rest (646) decided to use other words. When the condition is

invisible, 32 participants preferred *huna* (here), 342 subjects favored *hunaka* (there), 20 subjects

used *hunalika* (over there), and 684 wrote different answers (see Chart 11).
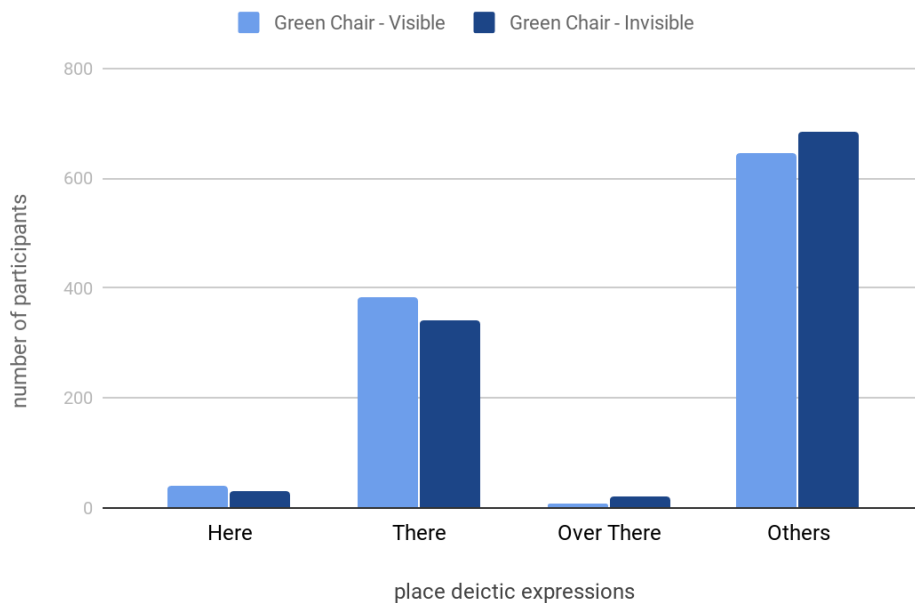
Chart 11: The difference between visible and invisible conditions for the green chair
referent.

The light blue bar in Chart 11 above represents the results when the green chair is shown in a

visible condition, while the dark blue bar represents when the green chair is shown in an

invisible condition. As for the last referent, which is the *house* referent, 47 participants chose

huna (here) to refer to the medial-distant visible house, 309 preferred *hunaka* (there), 18 used

hunalika (over there), and the rest (704) chose different expressions. When the same referent is

invisible, 34 participants chose *huna* (here), 252 subjects used *hunaka* (there), 34 participants

preferred *hunalika* (over there), and 758 decided to choose other words.

3.3.3 Proximal Distance in fill-in-the-blank questions

The fill-in-the-blank questions contained four non-paired pictures to measure the use of

place deictic expressions for proximal items. All referents, which are *wooden fence*, *cat*, *dog*, and

phone appeared in a proximal distance to the listener, but not visible (refer to appendix EXP 2

Q13 for more details and relative figures). 294 participants chose *huna* (here) to describe the

wooden fence in the invisible condition, 30 users preferred *hunaka* (there), 1 participant used

hunalika (over there), and the rest (753) chose other options. As for the referent *cat* which is

invisible under blanket, 356 participants chose *huna* (here), 49 subjects used *hunaka* (there), 1

user used *hunalika* (over there), 281 participants chose *taht* (under), and 391 subjects used

different expressions. As for the referent *dog* which also appeared invisible under a blanket, 348

participants used *huna* (here), 20 subjects wrote *hunaka* (there), 1 participant preferred *hunalika*

(over there), 436 users filled the blank with *taht* (under), and 273 participants wrote alternative

words. As for the final referent *phone* which appeared invisible inside a bag, 282 subjects filled

in the blank with *huna* (here), 8 users used *hunaka* (there), 1 participant chose *hunalika* (over

there), 269 participants wrote *dakhel* (inside), and 518 preferred other expressions.

	Dog	Cat	Phone	Wooden fence
Here	348	356	282	294
There	20	49	8	30
Over There	1	1	1	1
under	436	281	---	---
Inside	---	---	269	---
Others	273	391	518	753
Total	1078	1078	1078	1078

Table 7: A summary of the results of the proximal invisible referents dog, cat, phone, and wooden fence.

The table above shows a summary of the results of the proximal invisible referents *dog, cat, phone,* and *wooden fence*. Some referents such as *dog, cat,* and *phone* triggered additional deictic expressions such as *taht* (under) and *dakhil* (inside).

3.3.4 Rating scale questions

The second section of the survey asked participants to rate sentences based on naturalness. The sentence rating is based on a scale of 1-5 where five represents the most natural sentence, and one represents the least natural sentence. The section included 18 items, 3 of them are fillers. The remaining 15 items represent 3 pictures that each has one referent *mansion* (distal)*, house* (medial)*,* and *wooden fence* (proximal). Each one of these referents appears once visible and once invisible with exception to the proximal referent which is the *wooden fence*.

When the *mansion* referent is visible*,* the natural rating for the use of *huna* (here) to describe the distance is 2.05 (SD: 1.52, V: 2.32), while the natural rating of *hunaka* (there) is

3.65 (SD: 1.63, V: 2.65). A little bit less rating was scored for *hunalika* (over there) compared to *hunaka* (there) as it received 3.27 (SD: 1.69, V: 2.87). When the same referent is invisible, the natural rating of *huna* (here) is 2.01 (SD: 1.55, V: 2.39), *hunaka* (there) is 3.50 (SD: 1.64, V: 2.68), and *hunalika* (over there) is 3.34 (Check Figure 13 & Table 8).

Figure 13: The difference between visible and invisible conditions for the mansion referent.

Locative Adverb	Visibility	Distance	Mean	Responses	Max	Min	Standard Deviation	Variance
Here	visible	Distal	2.05	1078.00	5.00	1.00	1.52	2.32
	invisible	Distal	2.01	1078.00	5.00	1.00	1.55	2.39
There	visible	Distal	3.65	1078.00	5.00	1.00	1.63	2.65
	invisible	Distal	3.50	1078.00	5.00	1.00	1.64	2.68
Over There	visible	Distal	3.27	1078.00	5.00	1.00	1.69	2.87
	invisible	Distal	3.34	1078.00	5.00	1.00	1.69	2.85

Table 8: A summary of the results of the distal referent (mansion) in the natural rating.

Figure 13 shows the *mansion* referent with and without the visibility factor, and Table 8 above, summarizes the results of the natural rating of the subjects on a scale of 1-5 for the *mansion* referent. The rating of 5 represents the most natural use while the rating of 1 represents the least natural use.

As for the medial referent *house*, the natural rating of *huna* (here) is 2.51 (SD: 1.60, V: 2.54), *hunaka* (there) is 3.65 (SD: 1.57, V: 2.47), and *hunalika* (over there) is 3.41 (SD: 1.63, V: 2.67). When the *house* referent is invisible, the natural rating of *huna* (here) is 2.41 (SD: 1.58, V: 2.48), *hunaka* (there) is 3.64 (SD: 1.58, V: 2.51), and *hunalika* (over there) is 3.15 (SD: 1.63, V: 2.65). The natural rating of the *wooden fence* for *huna* (here) is 3.41 (SD: 1.67, V: 2.79), *hunaka* (there) is 2.33 (SD: 1.54, V: 2.36), and *hunalika* (over there) is 2.28 (SD: 1.53, V: 2.34; See Table 9 for a summary).

REFERENT	DISTANCE	VISIBILITY	HERE	THERE	OVER THERE
WOODEN FENCE	Proximal	Invisible	3.41	2.33	2.28
HOUSE	Medial	Visible	2.51	3.65	3.41
		Invisible	2.41	3.64	3.15
MANSION	Distal	Visible	2.05	3.65	3.27
		Invisible	2.01	3.50	3.34

Table 9: A summary of the average mean of the natural rating for three referents wooden fence, house, and mansion.

As indicated before, the rating in table 9 is based on a scale of one through five in which five represents the most natural sentence, and one represents the least natural sentence.

A three-way ANOVA 3x2x2 (deictic expressions x referents x visibility) was conducted to measure the difference in terms of natural use between place deictic expressions (*huna* 'here', *hunaka* 'there', and *hunalika* 'over there') and distances (*house* "medial distance" and *mansion* "distal distance") when used in visible and invisible environment. The results showed a significant interaction between all three variables (F (2, 2154) = 15.91, p < .001). The results also revealed a large significant difference between all three place expressions *huna* 'here', *hunaka*

'there', and *hunalika* 'over there' (F (2, 2154) = 527.7, p < .001) indicating a predictable difference in use between them. The difference between distances represented by *house* (medial) and *mansion* (distal) was also significant (F (1, 1077) = 43.7, p < .001). A substantial difference was obtained between visible and invisible items (F (1, 1077) = 20.5, p < .001) indicating a large effect of the visibility factor. The two-way ANOVA revealed a significant interaction (F (2, 2154) = 51.1, p < .001) between distances represented by *house* (medial) and *mansion* (distal) and deictic expressions (*huna* 'here', *hunaka* 'there', and *hunalika* 'over there') indicating a difference in use of deictic expressions based on distance. A significant interaction was also obtained between deictic expressions and the visibility factor (F (1, 1077) = 5.68, p < .02) suggesting a difference in the choice/use of deictic expressions based on the visibility of the referents.

A further analysis was conducted using A two-way ANOVA to measure the use of place deictic expressions (*huna* 'here', *hunaka* 'there', and *hunalika* 'over there') based on visibility for the distal referent *mansion*. A predictable huge difference was found between the three place indexicals (F (2, 2154) = 494.6, p < .001). A significant interaction was obtained between place deictic expressions and the visibility factor (F (2, 2154) = 7.52, p < .001) indicating a difference in use of locative adverbs based on visibility. However, when the visibility factor is examined regardless of place deictic expressions, only an approaching significance was found between visible and invisible referents for the distal distance (F (1, 1077) = 2.83, p = .093).

The analysis was examined further using 2x2 ANOVA to compare place deictic expressions for distal distances to each other's [*huna* (here) *vs. hunaka*; *huna* (here) *vs. hunalika* (over there)*; hunaka* (there) *vs. hunalika* (over there)] regardless of visibility. An expected

difference was found between *huna* (here) vs. *hunaka* (there), and *huna* (here) vs. *hunalika* (over there) in which all F's > 516. As for *hunaka* (there) vs. *hunalika* (over there), the results showed a significant difference between them for the distal distance (F (1, 1077) = 37.61, p < .001). A series of pairwise comparisons was conducted to measure the factor of visibility in distal distance for each place deictic expressions. No significant difference was found for the locative adverb *huna* (here; F (1, 1077) = 0.45, p = .50) nor it was found for the locative adverb *hunalika* (over there; F (1, 1077) = 2.96, p = .09). However, a substantial difference was found for the locative adverb *hunaka* (there; F (1, 1077) = 15.4, p < .001).

Another two-way ANOVA was conducted to measure the use of the locative adverbs (*huna* 'here', *hunaka* 'there', and *hunalika* 'over there') based on the visibility of the medial referent *house*. A substantial significant difference was found for the main effect of place deictic items (F (2, 2154) = 792.1, p < .001) indicating an expected difference in use between them. The results showed also a significant interaction between the place deictic items and the visibility factor (F (2, 2154) = 9.41, p < .001) indicating disparity depending on the visibility of the referent. The main effect of visibility was also significant (F (1, 1077) = 20.55, p < .001) indicating a difference between visible and invisible referents regardless of place deictic expressions.

A further 2x2 ANOVA was conducted to compare place deictic items [*huna* (here) *vs. hunaka*; *huna* (here) *vs. hunalika* (over there); *hunaka* (there) *vs. hunalika* (over there)] to each other for the medial distance. A predictable large difference was obtained between *huna* (here) vs. *hunaka* (there), and between *huna* (here) vs. *hunalika* (over there) in which all F's > 265. The difference between *hunaka* (there) vs. *hunalika* (over there) was also significant (F (1, 1077) =

94.7, p < .001). To conclude the analysis of the medial distance, a series of pairwise comparisons was conducted to measure the effect of visibility for each one of the locative adverbs (*huna* 'here', *hunaka* 'there', and *hunalika* 'over there'). A significant difference was found between visible and invisible referents (F (1, 1077) = 7.04, p < .01) when the deictic expressions *huna* (here) is used. No significant difference was found in the deictic expression *hunaka* (there) based on visibility (F (1, 1077) = 0.09, p = .76). When the deictic expression is *hunalika* (over there), a significant difference was found between visible and invisible referents (F (1, 1077) = 32.19, p < .001).

Finally, a one-way ANOVA was conducted to examine the effect of place deictic expressions for the proximal referent *fence*. The results showed a strong significant difference (F (2, 2154) = 258.1, p < .001) for the main effect of place deictic expressions (*huna* 'here', *hunaka* 'there', and *hunalika* 'over there') indicating a difference between locative adverbs in the proximal distance. A pair-wise comparison was conducted between the locative adverbs [*huna* (here) *vs. hunaka*; *huna* (here) *vs. hunalika* (over there)*; hunaka* (there) *vs. hunalika* (over there)] to examine the difference in use between them. An expectable significant difference was found between *huna* (here) vs. *hunaka* (there), and between *huna* (here) vs. *hunalika* (over there) in which all F's > 300. When *hunaka* (there) was compared to *hunalika* (over there) in the proximal distance, no significant difference was obtained (F (1, 1077) = 1.83, p = .18).

3.4 Discussion

This experiment examined the use of locative adverbs *huna* 'here', *hunaka* 'there', and *hunalika* 'over there' in MSA targeting distal, medial, and proximal distances in visible and non-visible environments. It aims to understand the effect of visibility on the choice of place deictic expressions, and whether or not this factor affects the perspective of users of MSA, and consequently, their choice of locative adverbs. To examine this effect, a series of survey questions was conducted using paired images to measure the effect of visibility in two main types: fill-in-the-blank questions and rating scale questions. All participants are native speakers of Arabic who expressed their judgment on the use of place deictic expressions with the visibility factor using fill-in-the blank and rating scale questions.

3.4.1 Participants

Similar to experiment 1, the results show that the majority of the participants are coming from the same country (Saudi Arabia; 66%), speaking dialects that are located in the same country and overlap in many uses (nearly third of the participants speak Najdi dialect, 332 out of 1078, 31%), and share the same education system, which could help – if exists – limit issues related to different uses of MSA. The participants performance on self-rating of MSA competence shows a resemblance of the current use of MSA in real life. As discussed in chapter 1, MSA is involved with the formal setting such as schools, universities, textbooks, newspapers, and serious talk shows. These settings usually train the input skills of MSA (listening and reading) more than the output skills (speaking and writing). In school for example, students are expected to read and listen to MSA more than writing and speaking which could occur in tasks

such as homework and presentations. Therefore, the input skills are always expected to be better and stronger for native speakers of Arabic. And indeed, The participants rated their MSA competence as 5.37, 5.35, 4.93, 4.34 for reading, listening, writing, and speaking respectively.
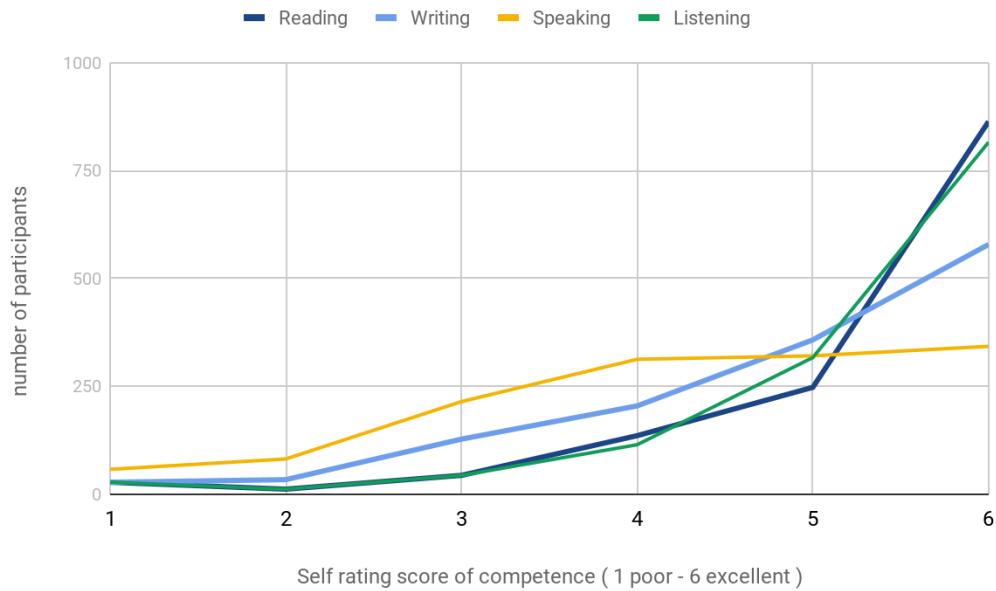
Chart 12: Self-rating competence for users of MSA indicating the distinction between input and output skills.

The chart above shows a different angle of the results of the self-rating competence of MSA which shows clearly the distinction between the input skills (listening and reading) and output skills (speaking and writing) for users of MSA.

3.4.2 Fill-in-the-blank questions

The fill-in-the-blank questions are designed to elicit answers from participants without directing them to specific choices. It helps to get the most common locative adverbs that are used

in specific situations which could clarify whether a certain locative adverb such as *hunalika* (over there) is still being used in MSA or if the system shifted to another place dimensional system. This method also helps to measure the effect of the employed pictures on the targeted referents, and could elicit alternative locative adverbs that are possible in such a situation and observe if new locative adverbs emerged. Thus, it suits examining the visibility factor of place deictic expressions due to the possibility of comparing participants' written answers to each other, which help observe the current, alternative, and newly emerged place deictic expressions when the referent is visible and invisible.

3.4.2.1 Fill-in-the-blank questions - distal

In Classical Arabic, there are three place deictic expressions: *huna* (here), *hunaka* (there), and *hunalika* (over there) in which they are used to express different distances: proximal, medial, and distal respectively. This spatial dimensional system, however, is not clear in Modern Standard Arabic in which some of these uses could have been changed over time particularly *hunalika* (over there). In experiment 1 in chapter 2, the fill-in-the-blank questions included 3 different distal referents to examine the dimensional system of place deictic expressions in MSA, this experiment doubled the number of distal referents to 6 (*house*, *airplane*, *mansion*, *small house*, *hot air balloon*, and *large house*), and each of them appeared two times; once visible, and once invisible making the total 12 appearances. The results of the distal referents, however, was very similar to experiment 1 in which the use of *hunalika* (over there) is disappearing (see table 11).

			house	airplane	mansion	small house	hot air balloon	large house
over there	visible	distal	12 (1.11%)	58 (5.38%)	63 (5.84%)	34 (3.15%)	39 (3.62%)	24 (2.23%)
	invisible		31 (2.88%)	47 (4.36%)	57 (5.29%)	41 (3.80%)	46 (4.27%)	32 (2.97%)

Table 11: A summary of the use of hunalika (over there) for distal referents in fill-in-the-blank questions

Table 11 shows that the highest use of *hunalika* (over there) in 12 appearances of distal referents did not reach 6%, and it was as low as 1%. The visibility factor did not seem to take a clear pattern with *hunalika* (over there) as it was used more when these four referents: *house, hot air balloon*, *small* house, and *large house* are invisible, and less when *airplane* and *mansion* are invisible. This could be due to the limited number of uses that *hunalika* (over there) received in this experiment.

The results of experiment 2 confirms the results found in experiment 1 in which the use of *hunalika* (over there) is being subsumed by the use of *hunaka* (there). One indication of such avoidance of use of *hunalika* (over there) is the style of fill-in-the-blank questions in which participants were asked 12 different times to fill-in the blanks with place deictic expressions to refer to 12 distal referents. This process could in some cases trigger monologophobia which typically encourages subjects to use different answers due to the fear of repeating themselves. Nevertheless, the multiple chances given to subjects of filling-in the blanks did not make participants use *hunalika* (over there). Please note that all these referents appeared very far, which is handled in Classical Arabic by *hunalika* (over there). This, however, was not the case in

both experiments in MSA, which indicates a shift in the spatial dimensional system in which MSA is becoming a dual system. Since the lack of use of *hunalika* (over there) is confirmed in this, and previous experiment, the discussion of *hunalika* (over there) in this section, and in forthcoming experiment is going to be minimal, and the focus would be on the commonly used locative adverbs: *huna* (here) and *hunaka* (there).

The use of the proximal locative adverb *huna* (here) to refer to the distal referents was limited as expected as the majority of uses did not reach 2.6%. As for *hunaka* (there), which is used in Classical Arabic to refer to medial distance, it was clearly the most favored locative adverb in this situation. It is used by the majority of the participants to signal the distal distance which further supports the previous argument that *hunaka* (there) in MSA is being used to refer to both medial and distal distances. The visibility factor did affect the choice of locative adverbs as it caused the use of *hunaka* (there) to decrease. This effect is consistent in 12 questions in which all of them experienced lower use of *hunaka* (there) when the referent is invisible. The lower use of *hunaka* (there) when being invisible did not however increase the use of *hunalika* (over there) to indicate further distance or *huna* (here) to indicate the opposite, it rather increased the use of other deictic expressions that are used to describe the location of the referent. Since participants are given the choice to write whatever locative adverb they prefer, and are not constrained by a limited number of words, some participants expressed the location of the referent in detail. This is particularly more evident when referents are invisible. Their answers included expressions such as *behind* or *next to* and they mention another visible referent. For example, if there is a tree that makes the visibility of the house less, some participants wrote, *The house is behind the tree* or *The house is next to a mountain*, instead of using *huna* (here)*, hunaka*

(there)*,* or *hunalika* (over there)*.* In summary, the visibility factor did affect the choice of the participants, however, this effect is not realized by more use of a deictic expression that is used for distal referents such *hunalika* (over there), but rather, a mere use of descriptive deictic expressions that are utilized to describe referents location.

3.4.2.2 Fill-in-the-blank questions - medial

The experiment has four referents that appeared in a medial distance which are *wooden fence*, *left house, green chair*, and *house*. Each one of these referents appeared two times: once visible, and once invisible making the total 8 appearances. Similar to the previous section, the use of *hunalika* (over there) with medial-distance referents is limited (highest: 3.62%; lowest 0.46%). As for *hunaka* (there), it was used the most by participants to indicate medial distance which aligns with the use of the same deictic expressions in Classical Arabic. Similar to the previous section, the visibility factor did affect the choice of participants by making users choose fewer locative adverbs such as *hunaka* (there) and more prepositions and descriptive deictic expressions. However, this effect was not the case with one referent which is the *wooden fence*. The four medial-distance referents varied in distance in which some are closer to being proximal such as *wooden fence*, and others closer to being distal such as *house*. The closer the referent to being distal is, the more similar it is to the effect that is discussed in the previous section, in which invisible referents receive less use of locative adverbs such as *huna* (here), *hunaka* (there), and *hunalika* (over there). However, when the referent is closer to being proximal, this effect fades as the case of the *wooden fence* as well as the use of *huna* (here) surges (See Table 12).

			wooden fence
there	visible	medial	214 (19.85%)
	invisible		222 (20.59%)
here	visible	medial	135 (12.52%)
	invisible		95 (8.81%)

Table 12: The use of huna (here) and hunaka (there) for the wooden fence referent.

Table 12 shows a similar effect of visibility for the deictic expression *huna* (here) in which a decrease of 40 participants (3.71%) occurred when the referent is invisible, however, the medial distance *hunaka* (there) did not experience this drop of use, but rather, it gained a small increase of 0.74% when the referent is invisible. This example shows a clear indication that the visibility effect – in fact – did help distance the use of *huna* (here), and blanks once filled with *huna* (here), was replaced by *hunaka* (there) when the referent is invisible. In other words, the choice of *hunaka* (there) for the *wooden fence* followed the same pattern in which it went through lower use when being invisible. However, due to the effect of visibility on distance, the users – who chose *huna* (here) – shifted their choice to *hunaka* (there) making the total number of choices for *hunaka* (there) increases. There are two indications that support this assessment, 1) The effect of visibility on user's choice is strong and consistent in all distal referents in which all of them showed lower use with invisible referents. This is also true with the medial referents that are closer to being distal in which all of them showed the same effect. 2) The same *wooden fence* referent that showed this effect with *hunaka* (there) experienced the same effect of visibility with the use of *huna* (here) in which 40 participants (3.71% of the total number) avoid it when the referent is invisible. This suggests that the invisibility factor did indeed help increase the choice

of *hunaka* (there) due to its role in extending the perception of the distance between the user and the medial-distant referent.

3.4.2.3 Fill-in-the-blank questions - proximal

The experiment included four proximal referents: *wooden fence*, *cat*, *dog*, and *phone* in which all of them appeared invisible. The results did not show an indication of use of medial or distal deictic expressions such as *hunaka* (there) or *hunalika* (over there), but rather, the choice of deictic expression is *huna* (here) or alternative propositions such as *inside* or *under*. The participants used prepositions to describe the location of the referents by describing the scene itself rather than the relative distance. As a result, there is a possibility that the visibility factor increased the use of prepositions and alternative deictic expressions, but it did not extend the perceived distance to make participants replace *huna* (here) by *hunaka* (there) or *hunalika* (over there).

3.4.3 Rating scale questions

The rating scale questions which are introduced later at the end of the survey help steering participants to the targeted locative adverbs, and force them to evaluate specific place deictic expressions. This type of questions allows the researcher to gain insight into the perspective of MSA users, and understand in what context or distance, a certain locative adverb is more or less natural. The experiment examined 15 items that represented 3 pictures: *mansion* (distal)*, house* (medial)*, and *wooden fence* (proximal). In the use of *hunalika* (over there), the results showed participants rate it less natural across all medial and distal items mimicking the

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results found in experiment 1. This further supports the indication that *hunalika* (over there) is not only being avoided in fill-in-the-blank questions, participants are actually perceived it as being less natural for both distal and medial items whether being visible or invisible. Thus, as indicated before, the discussion of *hunalika* (over there) is going to be limited.

The statistical analysis showed a significant difference between *huna* (here) and *hunaka* (there), and *huna* (here) and *hunalika* (over there) in all 15 items. These two differences are expected, and indicate that participants rate scale each item based on the natural use of the situation which implies an awareness of the task. An important significant difference was found between *hunaka* (there) and *hunalika* (over there) across medial and distal items. This suggests that *hunalika* (over there) is perceived significantly less natural than *hunaka* (there) in terms of use for medial and distal referents for both visible and invisible items.

Lastly, a significant correlation was obtained between the visibility factor and place deictic expressions where disparity differs depending on visibility for both distal (*mansion)* and medial *(house)* referents. These results align with fill-in the-blank questions in which the visibility factor played a role in changing the choice of locative adverbs *huna* (here) and *hunaka* (there) to other choices such as prepositions *haht* (under) and *khalf* (behind). The pairwise comparisons of rating scale tasks between visible and invisible referents for *huna* (here) and *hunaka* (there) showed a similarity to the results found in fill-in-the-blanks questions. In the distal distance for example, the results showed that participants filled-in-the-blank with *hunaka* (there) significantly less when the referent is invisible (visible: 352 vs. invisible: 284). At the same time, participants also rated the use of *hunaka* (there) significantly less natural when being invisible (visible: 3.65 vs. invisible: 3.50). As for the use of *huna* (here) with distal, participants

filled-in the blanks with *huna* (here) very few similar times (visible: 23 vs. invisible: 28) due to being irrelevant to the distal distance. The same can be said for the rating scale in which participants rated *huna* (here) as being the least natural, and no significant difference was found between visible and invisible referents (visible: 2.05 vs. invisible: 2.01; see Table 13).

		medial		distal	
	question type	visible	invisible	visible	invisible
here	fill-in-the-blank	135	95	23	28
	rating scale	2.51	2.41	2.05	2.01
		** significant: F = 7.04, p < .01		not significant: F = 0.45, p = .50	
there	fill-in-the-blank	214	222	352	284
	rating scale	3.65	3.64	3.65	3.50
		not significant: F = 0.09, p = .76		*** significant: F = 15.4, p < .001	

Table 13: A comparison between fill-in-the-blank and rating scale results.

A similar pattern is found for medial distance, a similar number of choices is made for the locative adverb *hunaka* (there) in the visible and invisible condition (visible: 214 vs. invisible: 222), and comparably, there is no significant difference between visible and invisible conditions in the rating scale task (visible: 3.65 vs. invisible: 3.64). However, in the use of *huna* (here) for the medial distance, a significant difference is found between visible (135) and invisible (95) referents in fill-in-the-blank questions. The same is true for rating scale questions in the medial distance in which a significant difference is obtained between visible (2.51) and invisible (2.41) conditions for the locative adverb *huna* (here).

As a summary, the visibility factor clearly plays a role in the choice of deictic expressions, yet, this role changes from distance to another. In the proximal distance, the visibility factor seems to divert the choice of participants from *huna* (here) to other choice particularly *dakhl* (under) and *taht* (inside) when the referent is invisible. This diversion, however, does not result in the choice of *hunaka* (there) as the referent is too close for the choice of medial or distal locative adverb. A comparable result is found in the distal distance in which participants preferred the choice of *hunaka* (there) over the choice of *hunalika* (over there). When the referent is distal and invisible, the unpopularity of *hunalika* (over there) prevents participants from using it to extend the distance, as participants consider it to be less natural. Thus, they used different deictic expressions such as *khalf* (behind) or bejanib (besides). When the distance is medial however, the participants – who used *huna* (here) to refer to the referent – moves to *hunaka* (there) to signal the distance. This effect suggests that the invisibility factor did extend the distance when the referent is medial, which allows the choice of *hunaka* (there) to be higher when the referent is invisible.

3.5 Conclusion

This experiment examined the effect of visibility on the choice of locative adverbs *huna* (here), *hunaka* (there), and *hunalika* (over there) using two tasks: fill-in-the-blanks and rating scales. The results confirm two findings that are discussed in experiment 1 of chapter 2 which are: 1) The use of *hunalika* (over there) is very limited across the board for both medial and distal distance. The use of *hunalika* (over there) in the present study for fill-in-the-blank questions do not exceed 6%, and it is as low as 1% which aligns with the previous findings. 2)

The use of *hunalika* (over there) does not seem as a matter of choice and preference, but rather, it is perceived as being less natural to be used with distal distance compared to *hunaka* (there) which signals a lack of awareness of this item. Additionally, the findings in the current study indicates that the limited use of *hunalika* (over there) is across the board for both visible and invisible referents.

The present experiment shows that visibility plays a role in the choice of participants in which it reduces their preference of locative adverbs and shifts them to other choices. This effect is found in all distances including proximal, medial, and distal wherein invisible referents receive more descriptive phrases and prepositions instead of locative adverbs. The visibility factor, however, appears to extend the distance of referents that are located in a medial distance as it transitions the choice of locative adverb *huna* (here) to *hunaka* (there) when being invisible. These findings indicate the importance of examining the state of the referent, as a change in its visibility, could result in alteration in the use of locative adverbs. In the next chapter, the factor of contact and control is going to be examined to check whether or not they also influence the use of place deictic expressions of MSA.

Chapter 4

Experiment 3

The effect of contact and control

4.1 Introduction

Distance is one of the main factors that plays a role in the choice of place deictic

expressions in all languages including MSA. This factor is examined in experiment 1 in chapter

2 in which the experiment is designed to measure the dimensional system of spatial deictic

expressions of MSA along with the use of *huna* (here), *hunaka* (there), and *hunalika* (over there).

Although distance is one of the major factors that control the choice of locative adverbs, it is,

nevertheless, not the only factor. In fact, recent literature indicates that a series of factors could

play a role in the choice of deictic expressions including visibility and contact and control (Imai,

2003; Huang, 2007; Jarbou, 2010; Peeters, Azar, & Ozyurek, 2014). The previous chapter looks

at the factor of visibility particularly the effect of referents invisibility on the choice of locative

adverbs and whether or not that affect distance the referent in the user perspective. The results

show indeed that this effect plays a role in distancing medial-distant referents to go toward being

distal in terms of the choice of place deictic expressions.

This chapter looks toward a new factor that could play a significant role in changing the

choice of spatial expressions which is contact and control. Imai (2003) argues that contact and

control is the key factor in terms of determining the choice of place deictics. He explains that

"Contrary to traditional descriptions of deictics based on relative distance, the present research

indicates that the primary and universal parameter is the speaker's [contact/control]" (p. 170).

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Contact and control refers to the speaker's ability to contact the referent whether directly or

indirectly (e.g. by a long stick) or the ability to control or manipulate it (e.g. by using a string)

without touching it. This chapter studies the effect of this factor when being accompanied by

other factors such as distance and visibility, and examines its role in the choice of spatial deictics.

4.2 Methodology

4.2.1 Materials

The experiment included two types of questions: fill-in-the-blank questions and rating

scale questions in addition to the introductory questions which are designed to collect data about

participants' background and education. The total number of questions is 46, in which 8 of them

are background questions, 20 are fill-in-the-blank questions, and 18 are rating scale questions.

The participants are given multiple pictures that each has a referent and a character, and asked

about the distance between the character and the referent. The pictures that are used in the survey

are shown four times (each with a different status of the character and the referent): contact and

visible, contact and invisible, no contact and visible, and no contact and invisible, which all is

discussed in detail in the upcoming subsections.

4.2.1.1 Background questions

The first part of the survey is designed to understand the participants background and

education. Similar to experiments 1 and 2, the eight background questions start by asking

participants about their age. This is designed to measure any generational difference – which is

examined using age range – in terms of uses of place deictic expressions. This is followed by questions about the country of the participants, the city they grow up in, and the dialect they spoke. These questions are included to analyze regional affect – if found – in the preference of locative adverbs, and whether the dialect plays a role in their choices. The participants are also asked in the background questions about their educational level and their learning of MSA. The last question asks participants to self-rate their competence in MSA using Matrix Table of four skills: reading, writing, speaking, and listening. The rating ranges between 1 and 6 in which 6 represents most competence, and 1 represents least competence. The answer of this question helps understand the participants' use of MSA, and their interaction with output (speaking and writing) skills versus input skills (reading and listening).

4.2.1.2 Fill-in-the-blank questions

The first part of the content questions – in the survey – introduced 20 fill-in-the-blank questions in which 16 of them include targeted pictures and 4 questions include filler pictures. Each question contains one picture that has a character and a referent, and participants are asked to complete a sentence with the suitable deictic expression (see Figure 14). The purpose of the survey is not disclosed to the participants, and the filler items are added to divert users' attention

Example: 1] The pink flower is here
                2] The hot air balloon is ......

Figure 14: Example of fill-in-the-blank questions in which participants are asked to
describe the distance between the character and the referent.

from the purpose of the survey. As indicated before, each picture appears in four different

statuses: contact and visible, contact and invisible, no contact and visible, and no contact and

invisible making the total number of the targeted pictures in this section four pictures excluding

fillers. There are four targeted referents in this section which are horse, book, rock, and kite, of

which all appeared four times in four different questions. For example, the character – in the

horse picture – appears four times: 1) once pointing to the horse from distance without

contacting, and the horse is visible, 2) pointing to the horse which the horse is invisible behind

trees, 3) the character appears holding a rope that is tied around the horse from a mid-range

distance while the horse is visible, and finally 4) the character appears holding a rope that is tied

around the horse while the horse is invisible (see Figure 15).

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Figure 15: Example of fill-in-the-blank questions in which the character appears in four status: contact and visible, contact and invisible, no contact and visible, and no contact and invisible

The same can be said for the use and status of the remaining items: book, rock, and kite. However, instead of using a long rope for the book and the rock, the character is holding a long stick, and is pointing toward the referents in the contact position whether being visible or invisible (See Appendix Q14-Q25 of Experiment 3).

4.2.1.3 Rating scale questions

While participants – in the previous section – sometimes avoided using the targeted place deictic expressions when filling-in the blanks, this section is designed to make participants have

to rate the naturality of each one of these place deictic expressions on a scale of one through five. Participants are given complete sentences that include the targeted locative adverbs, and asked to rate the most natural sentences a score of five and the least natural sentences a score of one. If the previous section helps understand what comes first to the participants mind when filling-in the blanks, this section is intended to understand how participants perceive these place deictic expressions during the status of connectedness and visibility. This section examines the use of two locative adverbs *huna* (here) and *hunaka* (there) in 16 rating scale sentences that utilize two pictures. Each picture appears in four different status: contact and visible, contact and invisible, no contact and visible, and no contact and invisible, and each status appears two times, once with *huna* (here), and another with *hunaka* (there), making the total eight rating scale sentences per picture. The entire number of sentences in this section are 18 sentences, 16 of them are targeted sentences, and 2 fillers.

The two referents that appeared in rating scale sentences are *horse* and *red telephone*. The rating scale sentences are short and straight forward, and native speakers are expected to perceive their degree of naturality based on their intuition effortlessly. For example, the referent *horse* appears in one status showing contact and visible, and the rating scale sentences appears as: *The horse is here*, and participants asked to give the sentence a score of one through five based on their evaluation of the scene (See Figure 16). The same picture appears later in the

Q: Rate the naturality of the following sentence on a scale of one through five.   1] The horse is here

Figure 16: Example of rating scale questions in which the character and the referent
appears in contact and visible condition

survey but in a different condition such as visible with no contact, and participants are given the

same locative adverbs to rate it. The same can be said for the *red telephone* referent in which it

appears eight times in four different status examining two locative adverbs per status. All

participants ratings and scores are averaged and examined using ANOVA and pairwise

comparisons to measure the naturality of the uses of the targeted place deictic items which is

discussed later in detail in the result and discussion sections.

4.2.2 Participants

The experiment included 1104 native speakers of Arabic who were recruited online,

participated voluntarily, and completed all questions of the survey. The participants' age ranged

from 18 to 60+ years old, with the majority of participants (632; 57.25%) being 18-24 years old,

followed by 25-30 and 31-40 and age groups which have 243 and 151 participants respectively.

There are 72 participants who are between 41 and 60 years old, and only 6 participants who are older than 60 years old. As for the education level, most participants have either a bachelor's degree (486; 44.02%) or high school diploma (418; 37.86%). 43 participants have master's or doctoral degrees, and the rest (157 participants) did not disclose their education level or have less than a high school diploma. The majority of participants come from the gulf region which is located in Middle East, mainly Saudi Arabia (615; 55.71%), Iraq (136; 12.32%), Kuwait (48; 4.35%) United Arab Emirates (33; 2.99%) as well as Egypt (45; 4.08%). 188 participants reported that they grew up in Riyadh city (Capital of Saudi Arabia), followed by Baghdad (54), Qassim (53), Jeddah (49), Madinah (29), Mecca (28), and Kuwait City (27). As for dialects, Najdi dialect (dialect spoken mostly in the central region of Saudi Arabia) is the highest with roughly quarter of the participants (284; 25.72%) reported that they use it in spoken language. This is followed by Hijazi (144; western region of Saudi Arabia), Janobi (108; southern region of Saudi Arabia), Iragi (42; central region of Iraq), and Shamali (37; northern region of Saudi Arabia).

As for the learning of MSA, 279 participants (25.27%) reported that they learned MSA before school compared to 491 participants (44.47%) who learned MSA in elementary school. 165 participants (14.95%) stated that they learned MSA in intermediate school, and 169 participants (15.31%) choose other options. 571 participants (51.72%) reported that they learned MSA before 7 years old, 317 (28.71%) described that they acquired MSA between 8 and 12 years old, and 216 stated that they learned MSA at 13 years old. The participants also self-rated their current competence in MSA on a scale of one through six in four main skills: reading, writing, speaking, and listening. The average ratings in all input skills (reading and listening) are

5.06 and 5.10 respectively, which aligns with the previous two experiments in which participants self-rated their competence higher than five.

Chart 13: The self-rating results of participants' competence in MSA in four skills: reading, writing, speaking, and listening.

As for the output skills, participants self-rated their competence in writing, which is a skill that is needed during school and sometimes work, as 4.73, and rating their skill in speaking, which is used less than all other skill due to the use of spoken language, as 4.54 (see Chart 13 for details).

4.2.3 Procedure

The survey was prepared and conducted using Qualtrics, which is an online system for managing surveys. The purpose of the experiment is not revealed to the participants, but rather,

they are given a broad description about the subject of the study. Similar to experiment one and two, all subjects were recruited using social media, and were directed using hyperlinks to the location of the survey, which is hosted at Qualtrics. When participants get to the survey, they are given an agreement that details their rights, contact details for any issue, duration of the survey, and handling and storing data. All instructions, agreement, questions, and choices are written in MSA, and participants are asked as well to write their answers in MSA. Participants completed the survey online using their own computers, and are instructed not to use the internet to search for answers or explore MSA or Classical Arabic grammars. Even though MSA is clear to native speakers of Arabic, out of precaution, the definition of MSA is provided to the participants at the beginning of the survey to avoid any confusion with Spoken or Classical Arabic. Since the questions of the survey are not dependent on each other, subjects are given the chance to temporarily stop the survey, and finish it later as long as it is done within one week. Even though participants are given this chance, only 2.4% participants used this option (all completed within 3 days), and the rest completed the survey the same day.

The first part of the survey includes fill-in the blank questions, and participants are expected to write in MSA in every blank. All questions in the survey are forced, meaning participants cannot proceed without completing the answers. No specific length of answers for fill-in-the-blank questions is specified, and participants can proceed when writing one word. Participants cannot go back during the survey and change their answers, as the back key is disabled. This is implemented to minimize any effect of participants changing their answers when learning – if ever – about the purpose of the survey. One question is shown per page to help make participants focus on the current task, and to avoid having different pictures per page

to limit confusion. The second part of the survey is rating scale, and participants are asked to rate a sentence based on a scale of one through five. The picture that has the targeted referent is located at the top, followed by the instruction of the rating scale questions at the bottom of it. The sentence that requires rating is located at the bottom followed by five choices representing the rating. The order of the items in the page makes participants see the picture first, then read the instructions, and then rate scale the sentence below it.

4.3 Results

The survey has 38 questions, 20 are fill-in-the-blank questions and 18 are natural rating scale questions. Each one of the questions appeared independently in the survey, however, in this section, the results and charts are grouped based on relevance to help compare participants' answers. The first part of the survey, which contains fill-in-the-blank questions, has four pictures that each has an independent referent: *horse*, *book*, *kite*, and *rock*. Each referent appears in the survey four times representing four different situations: visible and contact, visible and no-contact, invisible and contact, and invisible and no-contact (see chart 27 in Methodology). The natural rating scale questions which represent the second part of the survey has two pictures that included two referents: *horse* and *telephone*. Each referent was indicated eight times in natural rating sentences that targeted locative adverbs (here and there), visibility (visible and invisible), and contact (contact and no-contact).

4.3.1 Fill-in-the-blank questions

As indicated above, the fill-in-the-blank questions has four referents: *horse*, *book*, *kite*, and *rock*. When the *horse* referent is contact and visible, 118 participants chose *huna* (here) compared to 112 subjects who preferred *hunaka* (there). The use of *hunalika* (over there) for the same referent is less than one percent (0.72%) with only eight users and the rest of the participants favored different options. When the same referent appeared as visible with no contact, 37 participants used *huna* (here) compared to 234 users who preferred *hunaka* (there). 18 subjects chose *hunalika* (over there), and the remaining participants used other answers. When the visibility of the referent – that is contact – is limited or non-existent, 72 participants chose *huna* (here) while 82 users used *hunaka* (there). Eight participants used *hunalika* (over there), and the rest preferred different expressions. When the same referent is invisible with no contact, 27 users selected *huna* (here) compared to 164 participants who preferred *hunaka*

Locative Adverb	Contact/Control	Visibility	Distance	Count
Here	Contact	visible	Distal	118
		invisible	Distal	72
	No Contact	visible	Distal	37
		invisible	Distal	27
There	Contact	visible	Distal	112
		invisible	Distal	82
	No Contact	visible	Distal	234
		invisible	Distal	164
Over There	Contact	visible	Distal	8
		invisible	Distal	8
	No Contact	visible	Distal	18
		invisible	Distal	18

Table 14: The use of place deictic expressions for distal referents when combined with visibility and contact factors.

(there). 18 participants (1.63%) picked *hunalika* (over there), and the remaining user preferred other choices (See Table 14).

The *book* referent which is located in a medial distance has as well four situations: visible and contact, visible and no-contact, invisible and contact, and invisible and no-contact (See Figure 17). 50 participants chose *huna* (here) when the referent was visible with no contact, and 238 users chose *hunaka* (there) for the same situation. As for *hunalika* (over there), it was preferred 12 times, and the remaining users wrote other answers. When the referent is visible with contact, 126 participants used *huna* (here), 125 participants preferred *hunaka* (there),

Figure 17: Example of the referent book which appears in four situations: visible and contact, visible and no contact, invisible and contact, and invisible and no contact

eight participants favored *hunalika* (over there), and the rest chose different deictic expressions. When the referent is invisible with no contact, 34 users chose *huna* (here) compared to 108 participants who used *hunaka* (there). Nine participants picked *hunalika* (over there), and the rest selected other answers.

The third referent in the fill-in-the-blank section is *kite*, which is located in a distal distance relative to the character in the picture. In the visible with no contact situation, participants chose *huna* (here) to indicate the referent only 16 times compared to 181 times for the choice of *hunaka* (there). 13 participants used *hunalika* (over there), and the residual chose different expressions. When the referent is visible with contact, 63 users wrote *huna* (here), 147 participants preferred *hunaka* (there), 12 ones chose *hunalika* (over there), and the remaining participants used other options. When the referent is invisible with no contact, only 13 users chose *huna* (here) compared to 124 participants who preferred *hunaka* (there). The use of *hunalika* (over there) is 19 users, and the rest favored different answers. Finally, when the referent appeared invisible with contact, 82 users chose *huna* (here), 92 users preferred *hunaka* (there), 6 users preferred *hunalika* (over there), and the remaining users chose unrelated words.

The last referent in the fill-in-the-blank questions is a *rock* which is a medial distance referent. When it appeared naturally which is visible with no contact, 53 users chose *huna* (here), 205 participants used *hunaka* (there), only six users preferred *hunalika* (over there), and the rest wrote other options. When the referent is visible with contact, 88 participants chose *huna* (here) compared to 205 participants who preferred *hunaka* (there). 13 participants used *hunalika* (over there), and the remaining participants preferred other expressions. When the referent, however, is invisible with no contact, only 31 participants chose *huna* (here) compared to 138 participants who preferred *hunaka* (there). The use of *hunalika* (over there) is 18 users, and the rest selected different answers. Lastly, when the referent is invisible with contact, 82 participants chose *huna* (here), 73 participants used *hunaka* (there), 9 participants wrote *hunalika* (over there), and the remaining users favored unrelated uses.

4.3.2 Rating scale questions

The natural rating scale questions have two images that each has a referent that appeared in four different situations: visible and contact, visible and no-contact, invisible and contact, and invisible and no-contact. Each one of these situations appeared two times: once with *huna* (here), and another with *hunaka* (there), making the total appearances of each referent eight times. The two referents that appeared in the natural rating scale question are *horse* – which is a distal referent – and *telephone* – which is a medial referent. The average and SD of 1104 participants' natural ratings – on a scale of one through five – is collected and reported in this section. When the *horse* referent is visible with no contact, the mean of the participants rating of the natural use of *huna* (here) is 2.72 (SD: 1.62) compared to 3.63 (SD: 1.58) for the natural use of *hunaka* (there) for the same referent and situation. When the situation of the *horse* referent is visible and contact, users rated the natural use of *huna* (here) as 3.08 (SD: 1.64) and the natural use of *hunaka* (there) as 3.33 (SD: 1.63).

Visibility	Distance	Condition	Here	There
Visible	Distal	Contact	3.08	3.33
		No Contact	2.72	3.63
	Medial	Contact	3.18	3.46
		No Contact	2.70	3.42
Invisible	Distal	Contact	2.80	3.35
		No Contact	2.73	3.56
	Medial	Contact	3.08	3.76
		No Contact	2.42	3.38

Table: 15: The mean of the natural use of huna (here) and hunaka (there) for the distal and medial referents.

The natural rating scale of *huna* (here) for the invisible with no contact condition is 2.73 (SD: 1.65) while the natural rating scale of *hunaka* (there) is 3.56 (SD: 1.57). However, users self-rated the natural use of *huna* for the invisible with contact condition as 2.80 (SD: 1.64) compared to 3.35 (SD: 1.61) for *hunaka* (there) for the same condition (See Table 15).

The second referent in the natural rating scale questions is *telephone* which is located in a medial distance. When the referent appeared visible with no contact, the mean of the natural rating for *huna* (here) is 2.70 (SD: 1.61) compared to 3.76 (SD: 1.49) for *hunaka* (there). Yet, when the referent is visible with contact, the mean of the natural rating for *huna* (here) is 3.18 (SD: 1.64) while the mean of the natural rating for *hunaka* (there) is 3.46 (SD: 1.59). When the visibility factor is reversed (i.e. the referent is invisible) with no contact, the natural rating of *huna* (here) is 2.42 (SD: 1.58) compared to 3.38 (SD: 1.63) for *hunaka* (there). Finally, when the referent is invisible with contact, the natural rating of *huna* (here) is 3.08 (SD: 1.65) while the natural rating of *hunaka* (there) is 3.42 (SD: 1.58).

A 4-way ANOVA 2x2x2x2 (locative adverbs x locations x visibility x contact) was conducted to examine the natural use of deictic expressions (*huna* 'here' and *hunaka* 'there') and locations (*telephone* 'medial distance' and *horse* 'distal distance') during different visibility conditions (*visible* and *invisible*) with and without contacting (*contact* and *no-contact)*. The results revealed a main effect of place (deictic expressions) indicating a predictable difference between *huna* (here) and *hunaka* (there) regardless of other variables ($F (1, 1103) = 325.50$, $p < .001$). Main effects of contact ($F (1, 1103) = 26.63$, $p < .001$) and visibility ($F (1, 1103) = 40.52$, $p < .001$) are also significant indicating a strong difference between visible and invisible

referents as well as between contact and no contact situations. No significant effect was found for the main effect of locations ($F (1, 1103) = 2.31$, $p = .129$), indicating similar uses of variables in medial and distal distances. The 4-way ANOVA also revealed a significant interaction between locations (*telephone* 'medial distance' and *horse* 'distal distance') and contact (*contact* and *no-contact)* indicating a discrepancy depending on the location and the contact condition ($F (1, 1103) = 52.53$, $p < .001$). Likewise, a significant interaction was obtained between locations and the visibility factor ($F (1, 1103) = 14.98$, $p < .001$) where disparity differs depending on visibility for medial and distal condition. No significant interaction was found between locations and deictic expressions (*huna* 'here' and *hunaka* 'there'; $F (1, 1103) = 0.60$, $p = .437$).

To further examine the results, a 3-way ANOVA was conducted for each referent (*telephone* 'medial distance' and *horse* 'distal distance') to further understand the role of visibility and contact on the use of place deictic expressions. For the *telephone* referent, the results showed an expected main effect of place (*huna* 'here' and *hunaka* 'there'; $F (1, 1103) = 288.40$, $p < .001$). The main effects of visibility and contact are also significant ($F (1, 1103) = 51.49$, $p < .001$; $F (1, 1103) = 71.07$, $p < .001$) as well as an interaction between deictic expressions and contact ($F (1, 1103) = 113.00$, $p < .001$). As for the *horse* referent, the results show both main effects of place and visibility ($F (1, 1103) = 243.40$, $p < .001$; $F (1, 1103) = 9.52$, $p < .005$). Though no main effect of contact is identified ($F (1, 1103) = 0.83$, $p = .361$), a significant interaction was found between place (*huna* 'here' and *hunaka* 'there) and contact ($F (1, 1103) = 4.46$, $p < .05$).

Since the focus of this chapter is the factor of contact/control, a series of pair-wise comparisons was conducted to further understand the role of contact with place deictic

expressions. Four comparisons were conducted to measure the effect of contact for the *telephone* referent: 1) in the condition of visibility with the use of *huna* 'here', 2) in the condition of visibility with the use of *hunaka* 'there', 3) in the condition of invisibility with the use of *huna* 'here', and finally 4) in the condition of invisibility with the use of *hunaka* 'there'. A significant difference was found for the first, second, and third conditions between contact and no-contact (all F's > 36). No significant difference was observed for the fourth condition between contact and no-contact (F (1, 1103) = 0.58, p = .447). The same four conditions were examined for the *horse* referent to measure the effect of contact on the use of distal items. A significant difference was identified for the first, second, and fourth conditions between contact and no-contact (all F's > 18). No significant difference was found for the third condition between contact and no-contact (F (1, 1103) = 1.83, p = .177).

4.4 Discussion

The aim of the current chapter is to examine the factor of contact on the choice of space deictic expressions in MSA. To do that, an experiment that employs the judgment of native speakers of Arabic was conducted to understand how they use place deictic words when the referent is affected by other factors. The experiment was carried out using an advanced survey that is divided into three sections: 1) section of background questions, 2) section of fill-in-the-blank questions, and 3) section of self-natural rating of the use of place deictic expressions.

To help participants comprehend the task, an illustrated picture was provided with fill-in-the-blank questions and natural rating scale questions. The results show that the contact

factor does indeed significantly affect the choice of place deictic expression as shown equally in fill-in-the-blank questions and natural rating scale questions. The presence of the contact factor narrows the domain of the distance, and makes the use of *huna* (here) more appropriate as will be discussed later.

4.4.1 Participants

The first section of the survey seeks to understand the background aspects of the 1104 native speakers of Arabic including their competence in MSA. Similar to experiments one and two, the results showed that native speakers are better at the passive/input skill (listening 5.10/6.00 and reading 5.06/6.0) than output skills (speaking 4.54/6.00 and writing 4.73/6.00) which resembles real-life situations (see Chart 14).
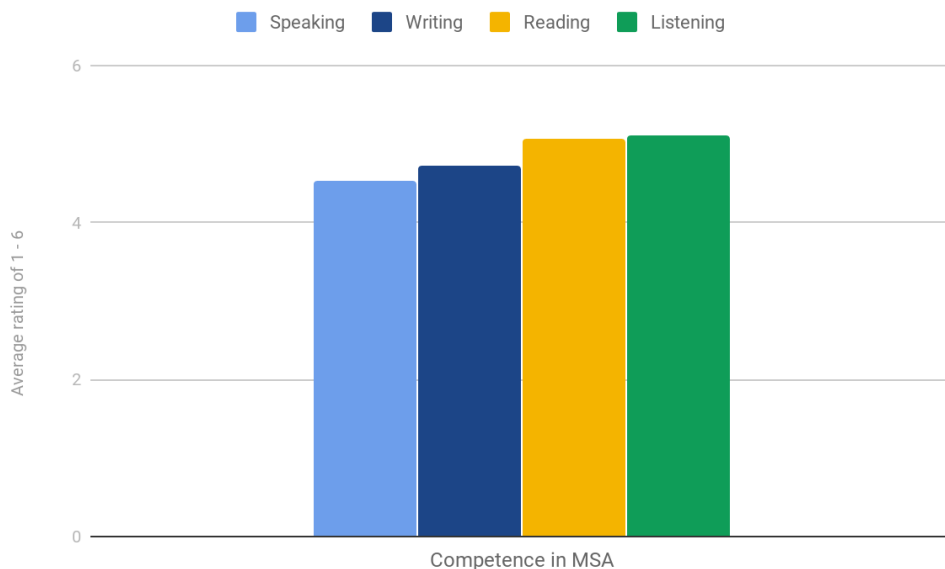
Chart 14: The average self-rating of participants' competence in MSA in input and output skills.

In real life, native speakers of Arabic are exposed daily to materials such as TV shows, education materials, newspapers, and books, which typically require MSA input knowledge, as opposed to output knowledge which is exercised less by native speakers. The results confirm the previous finding of the use of MSA in which participants showed significantly higher scores for the input skills.

4.4.2 Contact effect in fill in the blanks

The result showed a significant effect of contact on the choice of place deictic expressions in MSA. This effect occurs whether the distance of the referent is medial or distal even if the referent is invisible. This effect as well is present regardless of the type of contact, that being a long stick or a thin string. It seems that as long as the contact factor is used, the distance becomes more proximate in the eye of the interlocutor. For example, with the *book* referent, which is medial, 238 of participants (equal 79.33% of relevant answers) viewed the distance of *book* as media/distal and choose *hunaka* (there) to indicate the referent, and 50 participants chose *huna* (here). Yet, as soon as the contact factor is present, use of *hunaka* (there) dropped -47.48% to 125 uses, and the use of *huna* (here) surged 152.00% to 126 uses. This significant difference that occurred for the same picture that has the same characters in the identical scenery can most likely be only attributed to the additional factor that is introduced to the scenery, which is the contact factor. This factor is represented by an additional object that is added to the picture, which is – in this example – the long stick. The same effect occurred when the same referent is invisible behind a rock. The participants chose *hunaka* (there) 108 times,

which equals 71.52% of relevant answers, to refer to the invisible non-contact referent, and

chose *huna* (here) 34 times to refer to refer to the same referent. However, when the contact

factor is added to the picture, the use of *hunaka* (there) dropped -41.67% to 63 times, and the use

of *huna* (here) rose 323.53% to 144 times. These results suggest that contact factor is indeed

affect the choice of place deictic expressions, and this effect applies essentially equally to both

visible and invisible referents.

   While the contact factor affects the choice of medial-distant referents, the results of the

distal referent could not be more similar. The *horse* referent, for instance, is examined by adding

a long robe between the referent and the character to instate contact. When the referent is visible

with no contact, the use of *hunaka* (there) is 234 times (equal 80.97% of relevant answers)

compared to only 37 uses of *huna* (here). Nevertheless, when the contact variable is introduced,

the use of *hunaka* (there) fell -52.14% to 112 uses, losing more than half of the previous uses. As

a result, the uses of *huna* (here) gained 81 additional uses (218.92% increase) making the total

118 uses. Similarly, the effect of contact on distal distance is true for invisible referents as well.

The participants – with invisible no contact referent – used *hunaka* (there) 164 times compared

to only 27 uses of *huna* (here). With the contact factor, the uses of the invisible distal referent

dropped -50.00% to 82 times, and the uses of *huna* (here) surged 166.67% to 72 times. The

instant switch of uses of more proximal deictic expressions for both medial and distal referents is

a strong indication of the power of contact on the choice of native speakers of Arabic. Finally,

the use of *hunalika* (over there) has been collected, but due to the very limited number of uses

(averaged at roughly 1.00%), which is consistent with the previous findings in experiments one

and two, that concluded that this deictic expressions is on the verge of being subsumed by *hunaka* (there), it is not going to be discussed in this experiment.

Fill-in-the-blank questions tend to reveal what comes first to people's minds because the answers are not restricted by any choices, which give participants unlimited options. Having users double/triple their uses of proximal deictic expressions signals how effective this factor on their choices. In addition, these questions usually resemble life uses, in which users of a given language may pronounce/write an answer without necessarily being able to explain it. This makes the shift in participants' answers when the contact factor is introduced important, because it highly likely reflects their choices in real-life situations. On the contrary, natural rating scale questions, which are discussed in the next section, do not reflect real-life situations, but rather, force participants to think and evaluate a certain situation in order to be able to rate the natural use. The participants have to dive and dig deeper into their comprehension of the language to provide their rating. Each of the two approaches gives a glimpse of a different angle on how native speakers of Arabic use MSA in social interaction.

The effect of contact is consistent and robust in all examples of fill-in-the-blank questions except one example, which is the *rock* referent. This picture is introduced in fill-in-the-blank questions, but it did not get as much effect as the rest of the other pictures. The *rock* referent got a surge in use of *huna* (here) – with the contact factor – from 53 to 88 times, which is an increase of 66.04%. This increase is relatively lower than other referents, which have an increase that ranged between 150.00% to 320.00%. Another more noticeable element with this referent is the use of *hunaka* (there), which did not decrease in use when the contact factor is added as is the

case with all other pictures. Rather, the use of *hunaka* (there) stayed the same at 205 times

with/without the contact factor. When examining the picture itself (See Figure 19), it seems that

Figure 18: Example of the rock referent, which experienced slightly different results than
other pictures

the elements that played an effect on the slight difference between this picture and the rest of the

pictures is related to the design of the contact element (stick in this case), and the background of

the picture. The brown color of the stick, and the same color of the mountains behind the

character made part of the stick blend with the background, which may cause the body of the

contact factor not as pronounced as the rest of the pictures.

The results suggest that the factor of contact overcomes equally both the factor of

visibility and the factor of distance. When the factor of contact is added, participants tend to

switch their choices to accommodate this factor regardless of the referent distance or visibility. It

is also noticeable that the contact factor seems to influence the distal referents more than the

medial ones. It could be due to the fact that the use of *huna* (here) is more frequent with medial

distance than distal distance, which makes the total number of participants who switch from *hunaka* (there) to *huna* (here) less for medial referents. The contact factor also seems to elicit more uses of *huna* (here) for invisible referents which causes the visibility factor to be used in the opposite direction, shrinking distance instead of extending it. The uses of *huna* (here) for invisible referents is sometimes even more than the uses of *huna* (here) for visible referents as is the case with *kite* and *book* referents. It is however possible that the contact factor influences only the participants who choose place deictic expression to indicate invisible referents, and not necessarily influence those who preferred other options when the referent is invisible. In other words, the visibility factor could indeed affect the choice of participants first by making them choose other options, and the remaining participants are affected by the contact factor. This is because the total number of participants who used place deictic expressions when the referent is invisible is considerably less than those who used it when the referent is visible. This visibility factor in this experiment mimicked the results of the previous experiment that examined visibility in two ways: 1) participants diverge from using locative adverbs such as *huna* (here) and *hunaka* (there), and substitute them with descriptive phrases that use prepositions such as *khalfa* (behind) and *tahta* (under), and 2) the gap between the use of *huna* (here) and *hunaka* (there) widens when the referent is medial, suggestion an extending of distance. The next section discusses the results of natural rating scale questions and their implications on the effect of the contact factor.

4.4.3 Contact effect in rating scales

While fill-in-blank questions tend to extract the spontaneous response of participants, natural rating scale questions obtain insight from participants on situations they may not be comfortable with. As discussed before, the answers of fill-in-the-blank questions are powerful, but they are not enough if participants avoid certain targeted deictic expressions as is the case with *hunalika* (over there) in the previous experiment. In the current experiment, a substantial number of participants avoided using place deictic expressions in fill-in-the-blank due to the unrestricted nature of the design of the questions, which gave participants full power on their choices. In addition, more participants avoided using locative adverbs with invisible referents, and wrote instead descriptive phrases to describe the location of the referent. Natural rating scale questions address this issue, and help direct participants' answers to the targeted aim of the experiment.

The natural ratings of participants of place deictic expressions is consistent across all 16 items. The participants rate the use of *hunaka* (there) for medial and distal referents significantly higher than the use of *huna* (here) for the same referents which is expected. The locative adverb *hunaka* (there) is rated out of five as 3.63 and 3.76 respectively for the *horse* and *telephone* referent, while *huna* (here) is rated less naturally as 2.72 and 2.70 out of five. However, when the contact factor is introduced, the rating of proximal deictic expressions became more natural. Participants significantly rated the use of *hunaka* (there) less natural with the contact factor at 3.33 and 3.46 or the same referents, and significantly rated the use of *huna* (here) more natural at 3.08 and 3.18. As for invisible referents, more participants avoided using place deictic expressions to describe their locations, and preferred instead prepositions such as *khalfa* (*behind*)

and *tahta* (under). This avoidance of use in fill-in-the-blank questions was reflected in the natural rating, as participants rated the use of locative adverbs for invisible referents less natural. For example, the medial referent *telephone* was rated – when being invisible – as less natural to be used with *huna* (here) and *hunaka* (there) in all cases. The use of *huna* (here) is at 2.70 and 2.42 (visible vs. invisible) while *hunaka* (there) is rated at 3.76 and 3.38 respectively. It is, however, the case that when the contact factor is incorporated, the natural rating of both visible and invisible items becomes much closer. With the contact factor, *huna* (here) is rated at 3.18 and 3.08 (visible vs. invisible) and *hunaka* (there) is rated at 3.46 and 3.42 (visible vs. invisible). This significant reduction from 0.28 and 0.38 difference to 0.10 and 0.04 indicates a form of tolerance and acceptance toward invisible referents if they are supplemented by the contact element. This phenomenon is true in all cases in this experiment except for *huna* (here) with a distal referent.

4.5 Conclusion

As a summary, the contact factor does influence the choice of place deictic expressions in MSA for native speakers of Arabic. The effect of contact is evident and robust in fill-in-the-blank questions, in which it had a significant surge of use for *huna* (here) with the contact factor as compared to the use with no contact factor. This effect is not only a matter of choice or preference, but a matter of acceptance as well. The natural rating of acceptance for the use of *huna* (here) medial and distal referents is significantly higher with the contact factor as opposed to the use of *huna* (here) without the contact factor. Taken together, these findings indicate the important effect of contact on the choice of place deictic expressions for MSA users. The next chapter is intended to be a general discussion for the three experiments conducted in chapter one, two and three, and to provide further directions for future studies.

Chapter 5

General Discussion

5.1 Introduction

The previous three chapters conducted three experiments that examined the use of spatial deictic items in MSA targeting three factors: distance, visibility, and contact/control. Although the results of the previous experiments did not cover all factors, one conclusion is prominent, the traditional factor of distance is not the only factor that plays a role in the choice of place deictic expressions in MSA. In fact, some of the discussed factors such as contact/control overcomes the effect of the traditional factor (distance) by making users shift their choices from medial/distal deictic expressions to proximal ones.

All experiments were conducted using Qualtrics surveys to collect and elicit data from participants. They mainly focused on two techniques: 1) Asking participants to write answers without restrictions on choices, which tends to help get the actual use of the language, and 2) asking participants to rate how most/least natural a sentence is, which helps understand how native speakers of Arabic perceive the use of MSA. Both of these techniques are essential to understanding the MSA system of place deixis as a whole, and the use of these factors and their effect on the choice of spatial deictic expressions in particular. The following section summarizes the findings and conclusion of each experiment, and lays out their implications.

5.2 Experiments Overview

5.2.1 Experiment 1: The dimensional system of place deixis in MSA

To answer the first Research Question of the dissertation, Experiment 1 was conducted with 1332 native speakers of Arabic to study mainly the dimensional system of place deixis in MSA. The experiment focused on three locative adverbs: *huna* (here), *hunaka* (there), and *hunalika* (over there) that were used in Classical Arabic for proximal, mid-distance, and distal referents respectively. The aim of the experiment is to examine whether the place deictic system of MSA is a three-dimensional system similar to Classical Arabic, or shifted to become a two-dimensional system by removing the distal expression *hunalika* (over there). As indicated before, the experiment used fill-in-the-blank questions and natural rating scale questions as well as open-ended questions to collect data about the use of the locative adverbs in multiple situations that varied in distance and referents.

The results of fill-in-the-blank questions showed that the use of distal locative adverb *hunalika* (over there), decreased sharply to 1% - 2% for distal referents. Participants avoided the use of *hunalika* (over there) in fill-in-the-blank questions, and substituted it with the medial-distance expression *hunaka* (there). The results of the natural rating scale questions further supported the previous findings. It revealed that participants rated *hunalika* (over there) as being less natural than *huana* (there) for all distal referents. These results suggest that participants not only avoided the use of *hunalika* (over there) as is the case with fill-in-the-blank questions, but also considered it as being a less natural candidate for distal referents. This is a considerable shift from Classical Arabic, in which *hunalika* (over there) is regarded as the most

natural expression for distal referents. The results of fill-in-the-blank questions and natural rating scale questions, together, suggest that MSA is becoming a two-dimensional system, and *hunaka* (there) is the dominant expression for both medial and distal distances.

5.2.2 Experiment 2: The effect of visibility

To answer Research Questions II and III, the second experiment was conducted to measure the effect of visibility on the choice of place deictic expressions with a participation of 1078 native speakers of Arabic. The experiment used a similar pattern to experiment one in which Qualtrics surveys were utilized with a focus on fill-in-the-blank questions and natural rating scale questions. The second experiment was designed with a series of paired images that each show a referent two times: once visible and another invisible. Participants are asked to use the suitable locative adverb in these situations, and the participants' use of the locative adverbs is measured when the factor of visibility is altered. A similar pattern with natural rating scale questions in which participants are given the same referent in two situations: visible and invisible. Participants are asked to rate sentences that included the targeted locative adverbs on a scale of one through five in which five represents the most natural sentence, and one represents the least natural sentence.

The results showed that the factor of visibility seems to affect the choice of place deictic expressions in MSA. Participants tend to do two acts when the visibility factor is introduced. First, they avoid the use of locative adverbs, and substitute them with descriptive adjectives that include multiple prepositions such as *tahta* (under), *khalfa* (behind), and *dakhel* (inside) to

describe the location of the referent relative to the other objects in the scene. For example, when a certain referent is visible, participants would directly use locative adverbs such as *huan* (here) or *hunaka* (there), however, when the same referent - in an identical scene - is invisible, participants would use phrases such as *behind the tree* or *next to the house* to describe the location of the referent rather than using locative adverbs such as *huna* (here) or *hunaka* (there) to point out its location. Second, the results showed that the factor of visibility appears to affect the choice of place deictic expressions by making users change their choices to more distal expressions. For instance, when a referent is closer to being proximal, participants changed their choices to mid-distant expressions such *hunaka* (there) only when the referent is invisible.

The results of natural rating scale questions further supported the findings of fill-in-the-blank questions. First, the participants overall rated the use of locative adverbs as being less natural in general when the referent is invisible. This reflects participants' preference for descriptive adjectives that describe the scene of the invisible referent rather than using locative adverbs. Second, the natural rating scale questions showed a higher acceptance rate for distal expressions when being associated with invisible proximal referents as compared to the visible proximal referents. Although the effect of visibility on the choice of locative adverbs is not evident in all distances, the results of fill-in-the-blank questions and natural rating scale questions, taken together, encourage taking the visibility factor into consideration when examining the factors that affect the choice of place deictic expressions.

5.2.3 Experiment 3: The effect of contact/control

To answer Research Questions II and IV, a third experiment was conducted to measure the effect of contact and control on the choice of place deictic expressions in MSA. The experiment tested 1104 subjects who are native speakers of Arabic and participated voluntarily in the study. The design of the experiment is similar to experiment one and two in which data were collected using Qualtrics surveys. Fill-in-the-blank questions and natural rating scale questions were incorporated in this experiment to collect data about the factor of contact and control. This factor was examined by showing participants the referent in four conditions: 1) visible with contact using a long stick or a string, 2) invisible with contact using a long stick or a string, 3) visible with no contact to the referent, and finally 4) invisible with no contact. The effect of contact and control is measured in both fill-in-the-blank questions and natural rating scale questions by alternating between the previous four conditions in order to examine how contact and control affects the preference of place deictic expressions for Arabic users.

In fill-in-the-blank questions, the results showed that the contact/control factor does indeed affect the choice place deictic expression by substituting the use of distal deictic expressions with proximal ones. For example, participants used *hunaka* (there) in fill-in-the-blank questions to refer to referents such as *kite* when being in the sky without any contact, however, when the speaker has a connection by holding a string that is attached to the same referent (*kite*), participants shifted their choice in fill-in-the-blank questions to *huna* (here). The same behaviour occurred with the other referents such as *horse, book, and rock*. Regardless of the connection type - that being a string or a long stick -, participants changed the choice of

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locative adverbs to indicate proximity when connectedness is found in the scene, and relied on distance when connectedness is absent.

The results of the natural rating scale questions in this experiment added more validation to the results found in fill-in-the-blank questions. As indicated before, natural rating scale questions reveal participants' acceptance of place deictic expressions when being used in certain situations. In this experiment, the non-connected distal referents received a higher acceptance rate when being used with medial/distal deictic expressions such as *hunaka* (there), and a lower acceptance rate when being associated with proximal deictic expressions such as *huna* (here). Nevertheless, when the same distal referents are connected with a long stick or a string, the acceptance rate for distal deictic expressions significantly dropped, and the acceptance rate for proximal deictic expressions such as *huna* (here) significantly increased. The results presented an evident effect of the contact factor on the choice of place deictic expressions for native speakers of Arabic.

5.3 Participants

Although participants' use of MSA is not the focus of the dissertation, the series of the conducted experiments revealed interesting aspects of how native speakers of Arabic interact with both Modern Standard Arabic and Arabic dialects for everyday purposes. The sample size of the conducted experiments (each has at least one thousands subjects with a total number of 3514 subjects) is sufficient to draw a picture of the role of MSA in the current Arabic culture. The background data of the native speakers of Arabic including country, city, dialect, age, and

education as well as their competence in MSA are collected in the first section of each experiment. The results of this section help compare the uses of MSA across different countries and dialects, and shed light on the changes – if they exist – between different generations. The collected data of participants' competence in MSA show how native speakers of Arabic as a whole use MSA, with the presence of local dialects. As indicated in previous chapters, MSA is the language of formal settings such as schools, universities, and conferences and it is almost always used in books, serious talk shows, public preachings, laws, and newspapers. However, when speaking with each other in casual settings, native speakers of Arabic tend to use dialects to communicate. The phonological and syntactic similarities between dialects and MSA varies from one dialect to another depending on geopolitical and geographical factors. This phenomenon of having two separate, yet similar, systems co-existing with each other at an early stage for children is well-studied, and referred to as diglossia, and can be found in Standard French/Creole in Haiti, and Katharevousa/Dimotiki in Greece, and others. The effect of having two systems made users of Arabic exhibit some characteristics that are usually found only in bilingual speakers. For example, the metalinguistic awareness of bilingual children tends to be superior to monolingual children (Campbell & Sais, 1995). However, Eviatar and Ibrahim (2001) examined the metalinguistic abilities for three groups: bilingual Russian–Hebrew children, Arabic children, and Hebrew children, and found that the metalinguistic awareness of Arabic speakers mimicked the awareness of bilingual speakers due to the co-existing systems of MSA and local dialects.

The results of the self-rated competence in MSA captures this effect, and sheds light on how these two systems work with each other. It showed that native speakers of Arabic are more

competent in input skills (listening and reading) than output skills (speaking and writing). Chart 15 below combines and balances the data of the self-rated competence in MSA of experiments one, two, and three, and lists them together in a line chart. The passive skills (listening and
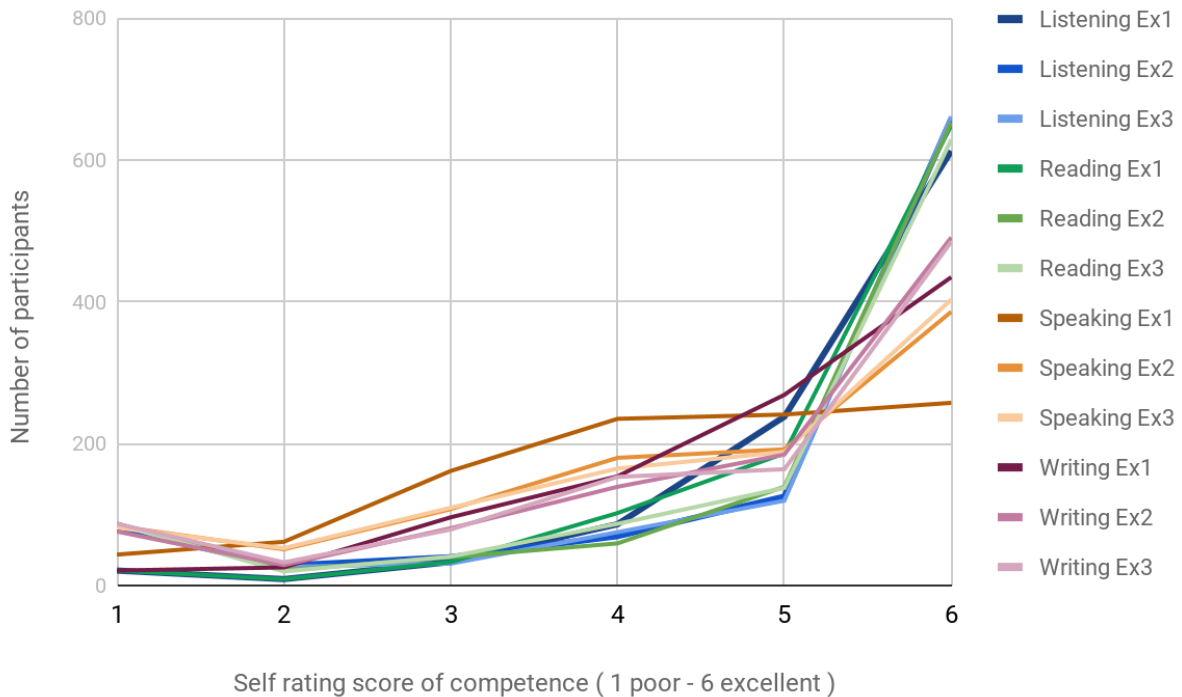
Chart 15: The self-rating results of EX1, EX2, and EX3 of participants' competence in MSA in four skills: reading, writing, speaking, and listening

reading) are marked by the grade of blue and green respectively while the output skills (speaking and writing) are marked by the grade of orange and magenta. Despite having different experiments with different subjects who sometimes may come from a different country (e.g. Iraqi subjects account for only 0.4% [5 subjects] in experiment one and 12.32% [136 subjects] in experiment two), the results of self-rated competence in MSA did not change. As indicated

before, these results indeed resemble real-life situations in which people read and listen to MSA on a daily basis, and rely on dialects for communication.

The previous three experiments have two generations: the younger generation which represents 73% (2,581) of participants reporting they are under 30 years old, and the older generation with 27% (934) of participants reporting they are older than 30 years old. Having roughly one quarter of participants linked to the older generation is considerably sufficient to examine any generational gap in terms of use or natural judgment. Having more participants related to the younger generation is beneficial to the experiment since the younger generation tends to be more literate and closer to school years which increase their MSA competence particularly in reading and writing. In addition, the literacy rate in the younger generation tends to be higher than the older generation due to more accessibility to schools and universities. For example, in Saudi Arabia, which is the country of 72% of the participants, the youth literacy is 99.30% compared to the average literacy rate of adults which is 95.33% (UNESCO Institute for Statistics, http://uis.unesco.org).

All participants in all experiments are native speakers of Arabic who come mainly from the gulf region Saudi Arabia, Iraq, Kuwait, United Arab Emirates, Qatar, Bahrain, and Oman as well as other neighbouring countries such as Syria, Egypt, Lebanon, Palestine, and Jordan (see Figure 19). The Arabic dialects used in these countries do not have heavy use of loanwords as is

Figure 19: The highlighted color represents the countries where participants reside, which are located in transcontinental regions that include most of what is referred to as the Middle East.

the case - for example - with Moroccan or Algerian dialects (Brahimi 1999; Louriz and Kenstowicz, 2009). The dialects of Saudi Arabia and others did not suffer grave phonological or semantic change, which make them suitable for the current experiment to avoid interference on MSA.

5.4 The Dimensional System of Place Deictics in MSA

The previous three experiments showed that participants do not seem to consider the distal and medial distances when choosing locative adverbs. It seems that the place deictic expression *hunaka* 'there' is the candidate that comes first as shown repeatedly throughout their answers. However, if the candidates were asked directly about the difference between these two place deictics (*hunaka* 'there' and *hunalika* 'over there'), more than half of the participants (54.05%) are able to tell the difference as shown in experiment one. Alluhaybi (2015) proposed a system for the dimensional system of place deictics in MSA targeting locative adverbs *hunaka* *'there'* and *hunalika* 'over there' (see Figure 19), and indicated that "the uses of the two expressions seem to overlap with each other" (p. 12).

Three-dimensional system (Classical Arabic):

P ⟶ M ⟶ D

Modern Standard Arabic:

P ⟶ M D

P = Proximal   M= Medial   D= Distal

Figure 20: The dimensional system of Classical Arabic and Modern Standard Arabic that is proposed by Alluhaybi (2015).

Figure 20 shows the difference between the system of MSA and Classical Arabic, and how the use of the medial and distal distances in MSA overlaps with each other. However, since place deictic expression *hunaka* 'there' is the dominant place expression in MSA for both medial and distal distances, and being used overwhelmingly by native speakers of Arabic to refer to distal referents, it should not be placed as an equal to *hunalika* 'over there' which is not used nor recognized by many users of Arabic. In this chapter, we propose a modification for the dimensional system of MSA. The updated chart accounts for the fact that *hunaka* 'there' currently covers both medial and distal distances in the dimensional system of place deictics while *hunalika* 'over there' is becoming a limited part of it (see modifies Figure 21).

Modern Standard Arabic:
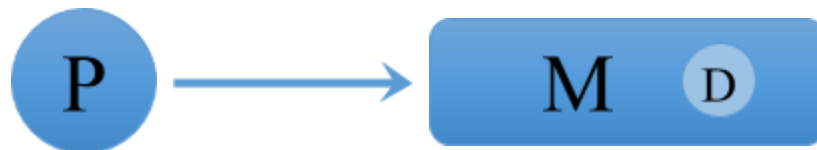
P = Proximal   M = Medial   D = Distal

Figure 21: Modified version of the dimensional system of place deictics in MSA.

Figure 21 above shows the modified version which demonstrates the current status of *hunalika* 'over there' by illustrating the dominance of *hunaka* 'there' in MSA. The medial deictic expression *hunaka* 'there' is taking over the deictic expression of distal distance *hunalika* 'over

there', and the use of the latter seems to be decreasing over time as have been shown by the analysis of the participants' answers in all conducted experiments.

5.5 Main Findings

This dissertation looked into the dimensional system of MSA as well as the factors that play a role in the choice of spatial deictic expressions. The experiments in this dissertation are designed to collect data - as naturally as possible - about how native speakers conduct and use locative adverbs in different situations. The results collected in experiments one, two and three show five key findings. First, the results of the self-rating of MSA competence for native speakers of Arabic reflect how the language is used in real life. As mentioned previously, the findings are consistent throughout the experiments, and show how input skills of MSA are more acquired for native speakers of Arabic than output skills due to the way MSA is integrated in the Arabic societies. Second, the traditional factor distance plays a significant role in determining the choice of locative adverbs when the visibility and contact/control factors are not present. The subjects always change their choices to distal deictic expressions when the referent is placed further, and to proximal deictic expressions when the referent is placed closer. The natural rating scale questions revealed similar results in which sentences received high/low ratings in accordance with the range of the referent. The findings distinctly show that the role of distance cannot be minimized, but rather, it should be examined with the other factors to determine the ranking of each one. Third, the use of *hunalika* (over there) is rare, which is an indication of

shifting toward a simplified two-dimensional system. The results of the low use of *hunalika*

(over there) is evident and consistent in the three experiments despite having different

participants, referents, distances, and factors. Fourth, the role of visibility remains somewhat

fuzzy. It functions in most part as an element that drives subjects away from using locative

adverbs. The results showed one distance - which is proximal - in which invisibility appears to

change the choice of users from proximal to distal deictic expressions. For the rest of the

distances, the visibility factor attracted more uses of descriptive phrases that describes the

location of the referent and less uses of place deictic expressions. Finally, the role of

contact/control is robust and effective in all cases. The use of spatial items always changed from

distal to proximal when the contact/control factor is included. This factor seems to be universal

and constantly prioritized when being present with the traditional factor of distance.

5.6 Conclusion

This chapter summarizes the finding of the dimensional system of place deixis in MSA as

well as discussing the competence of MSA for native speakers of Arabic. The findings show

with clarity that Arabic is moving from a three-dimensional system of place deixis into becoming

a two-dimensional system. This chapter also overviews the conducted experiments that looked

into three factors: distance, visibility, and contact/control. It demonstrates that the contact/control

factor along with the distance factor should be taken into consideration when discussing the

choice of place deictic expressions in MSA. The visibility factor, however, needs further

examination as the findings in this dissertation are not sufficient. The main concern for the

visibility factor is that it distances users from using locative adverbs to other descriptive phrases. Future research papers could overcome this issue by limiting the choice of participants to only place deictic expressions in order to avoid having irrelevant answers. It is also possible that inspecting the role of visibility is not suitable for online surveys and requires real environments in which natural occurring instances are examined. Furthermore, future studies could explore more factors such as accessibility and visual joint attention and whether or not they play a part in the choice of spatial deictic terms in MSA. Finally, more research is needed in other languages besides MSA to study the similarities and shared properties as well as the universality of the discussed factors across different languages and dialects.

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APPENDIX

Q1. Age of participants:
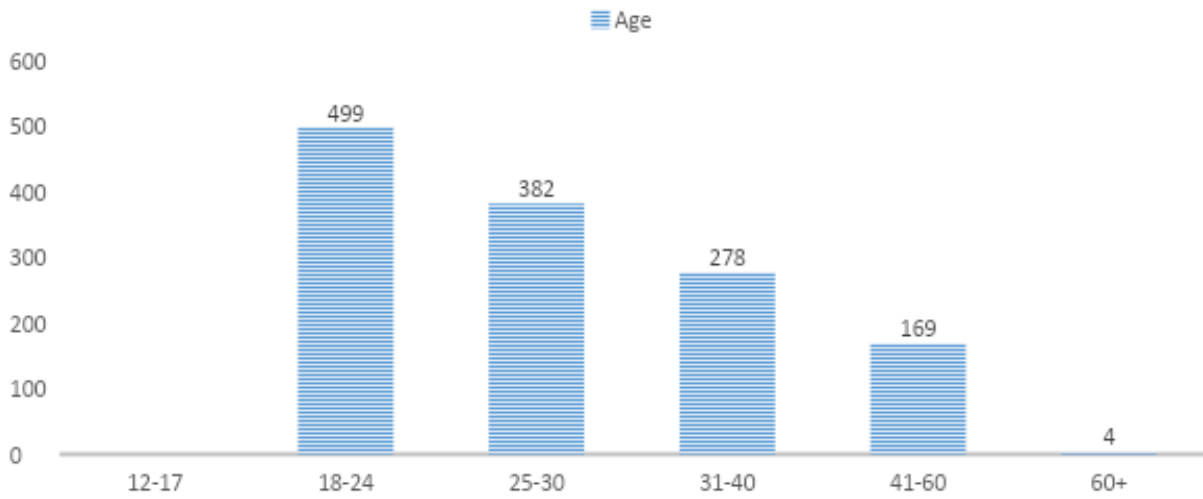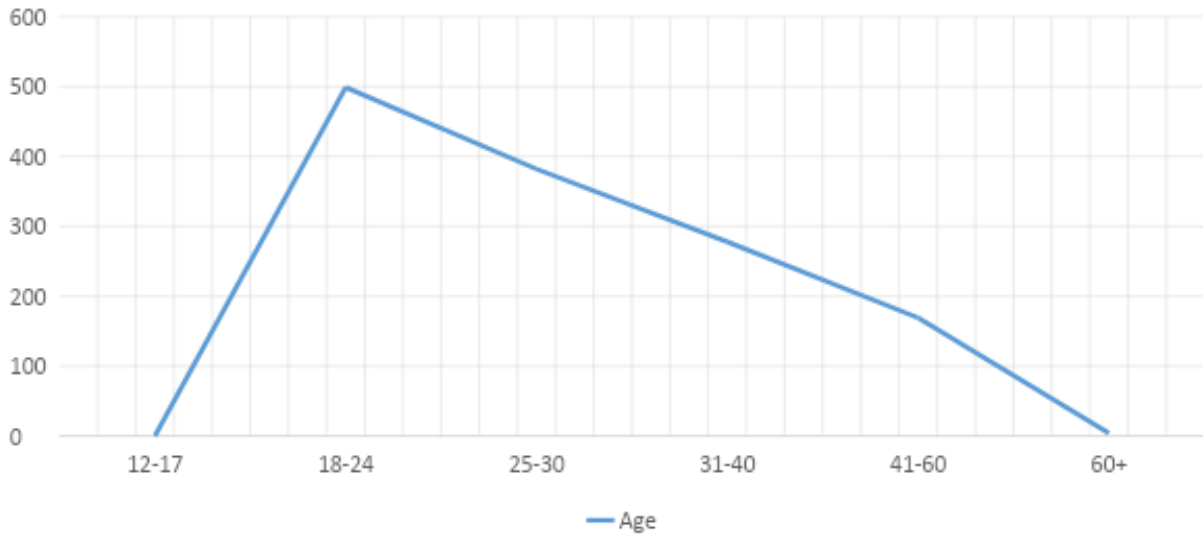
Q2. Education level of Participants
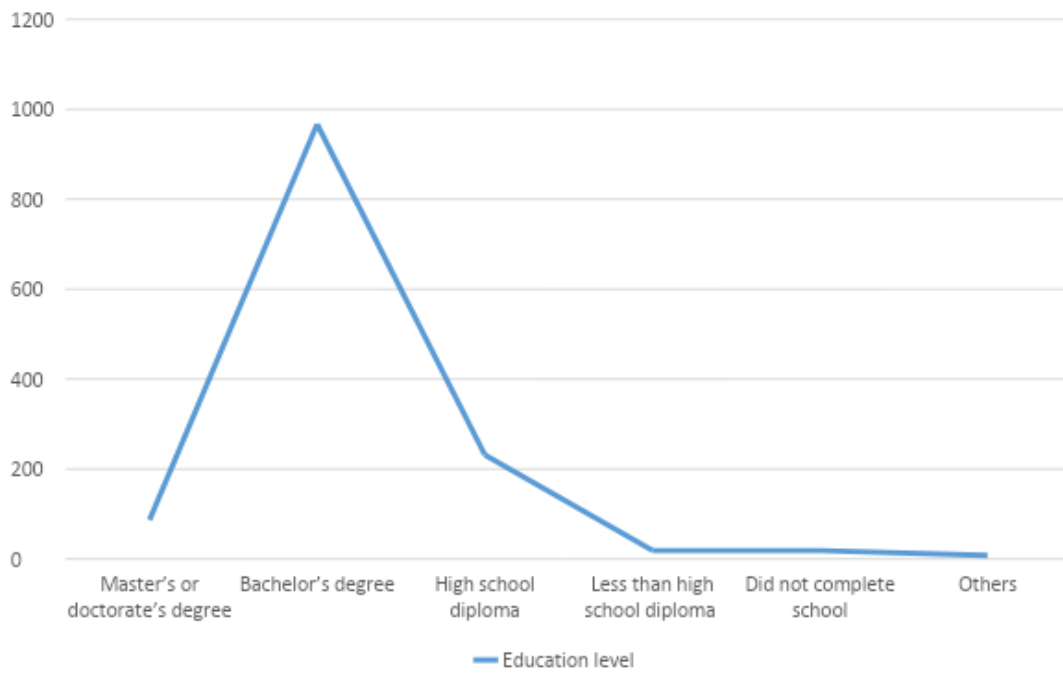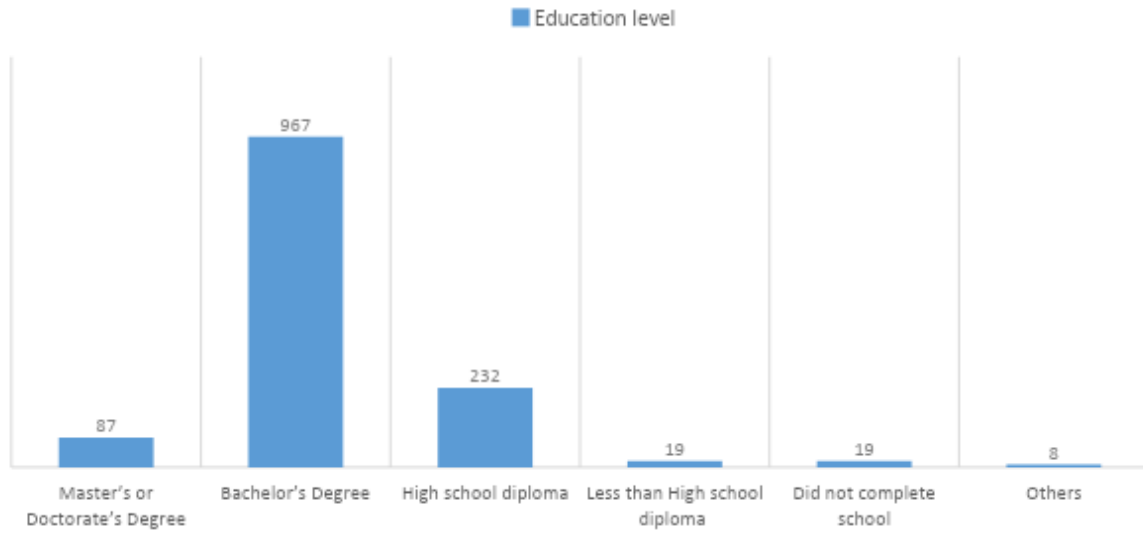
Q3. Country of Participants
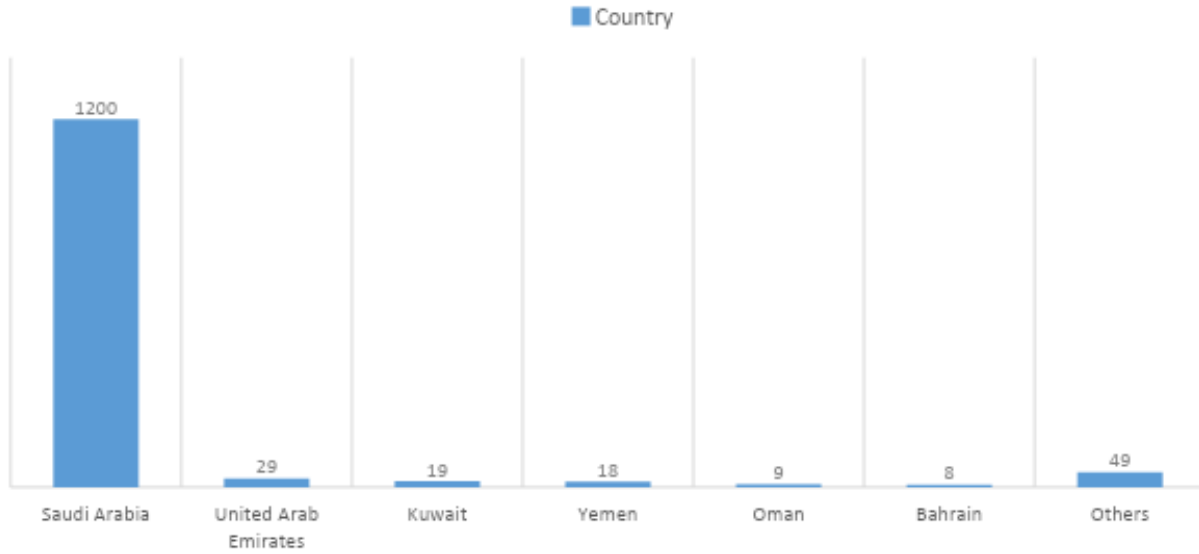
Country	Response	%
Saudi Arabia	1200	90.09%
United Arab Emirates	29	2.18%
Kuwait	19	1.43%
Yemen	18	1.35%
Oman	9	0.68%
Bahrain	8	0.60%
Others	49	3.68%
Total	1332	100%

Q4.   The city that participants grew up in
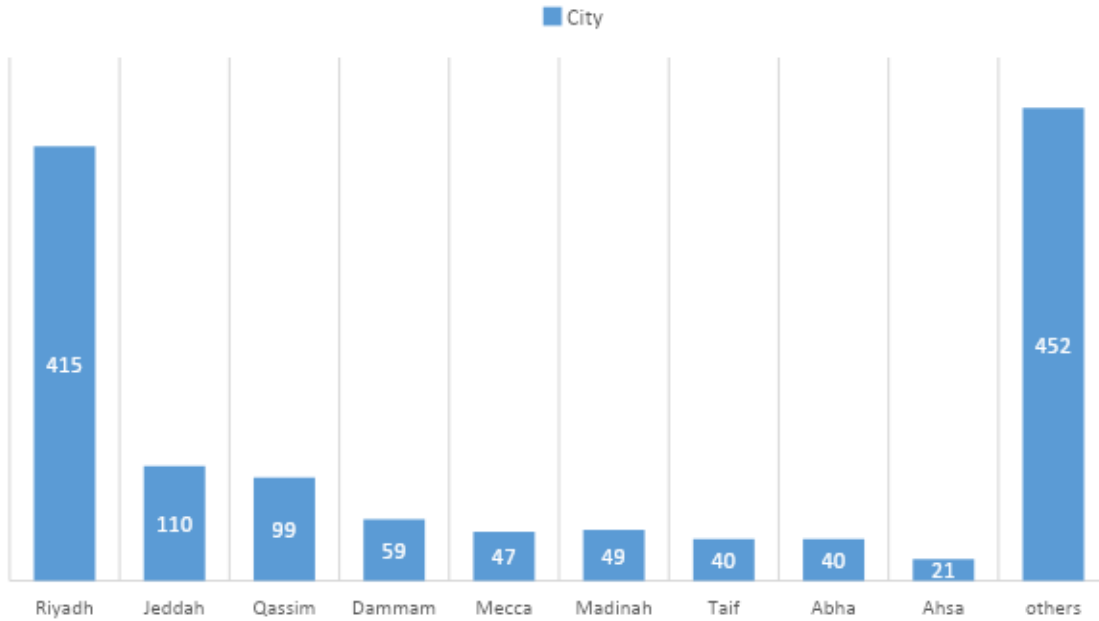
City	Country of the City	Response	%
Riyadh	Saudi Arabia capital (Central)	415	31.16%
Jeddah	Saudi Arabia (Western)	110	8.26%
Qassim	Saudi Arabia (Central)	99	7.43%
Dammam	Saudi Arabia (Eastern)	59	4.43%
Madinah	Saudi Arabia (Western)	49	3.68%
Mecca	Saudi Arabia (Western)	47	3.53%
Taif	Saudi Arabia (Western)	40	3.00%
Abha	Saudi Arabia (Southern)	40	3.00%
Ahsa	Saudi Arabia (Eastern)	21	1.58%
Others		452	33.93%
Total		1332	100%

Q5. Dialect of participants
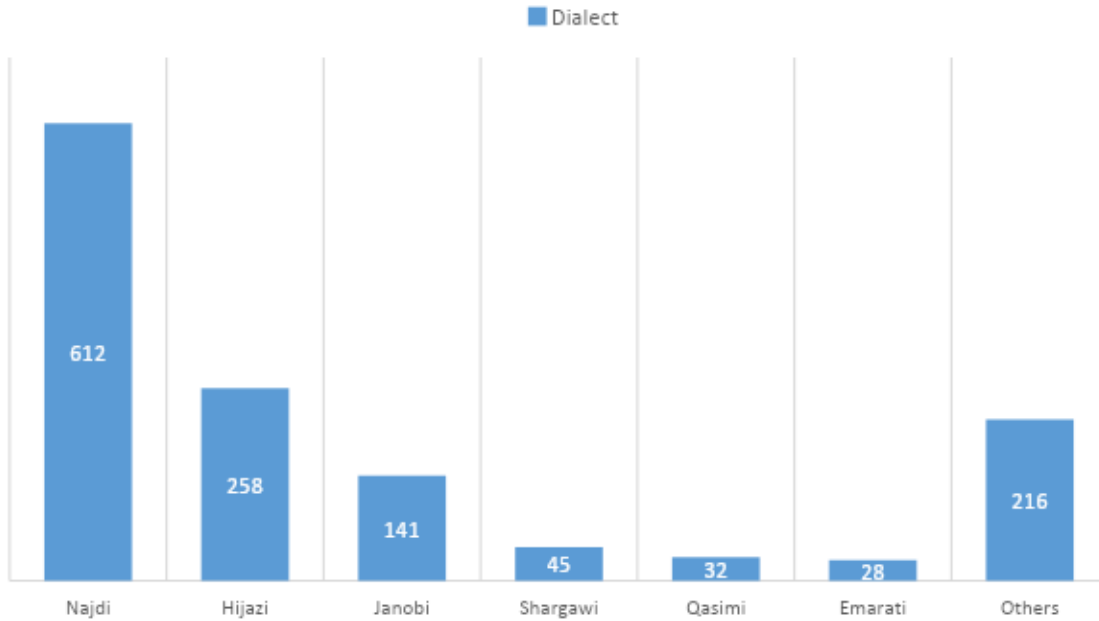
Dialect	The country where the dialect is Spoken	Response	%
Najdi	Saudi Arabia capital (Central)	612	45.95
Hijazi	Saudi Arabia (Western)	258	19.37
Janobi	Saudi Arabia (Southern)	141	10.59
Shargawi	Saudi Arabia (Eastern)	45	3.38
Qasimi	Saudi Arabia (Central)	32	2.40
Emarati	United Arab Emirates	28	2.10
Others	---	216	16.22
Total		1332	100%

Q6. Learning Modern Standard Arabic

Learning MSA

Learning MSA

	Before School	Elementary School	Intermediate School	Other
	207	855	177	93
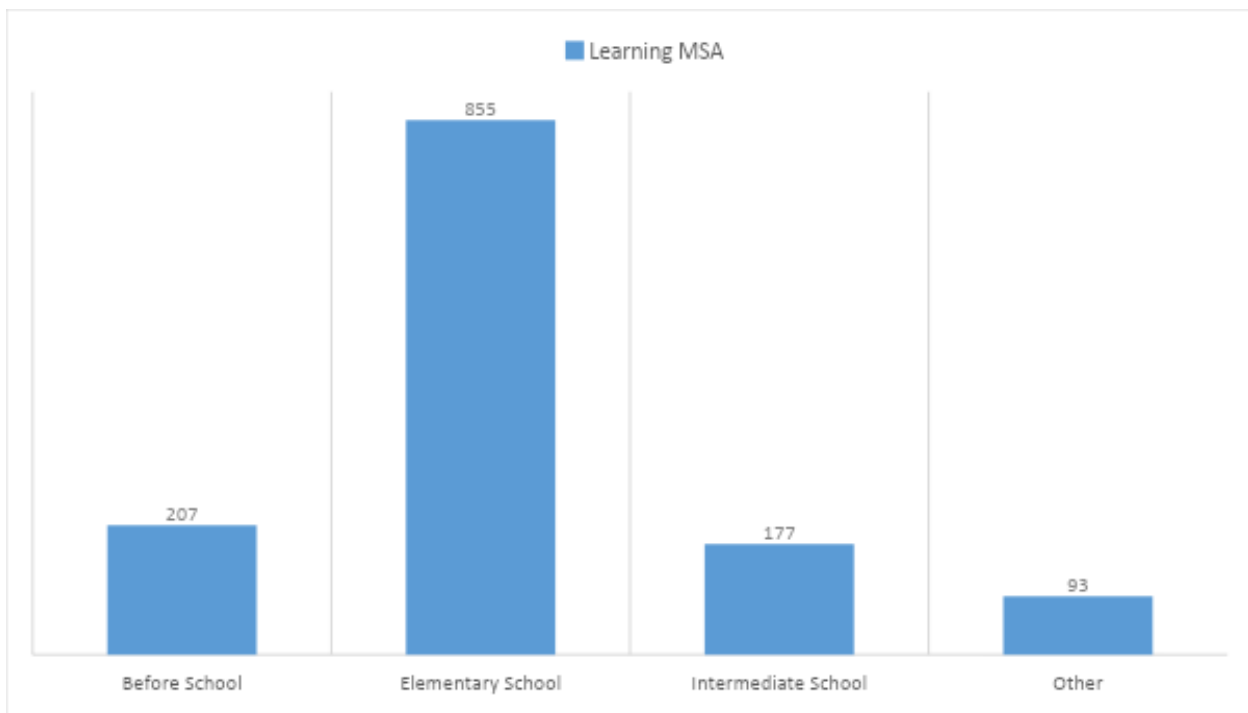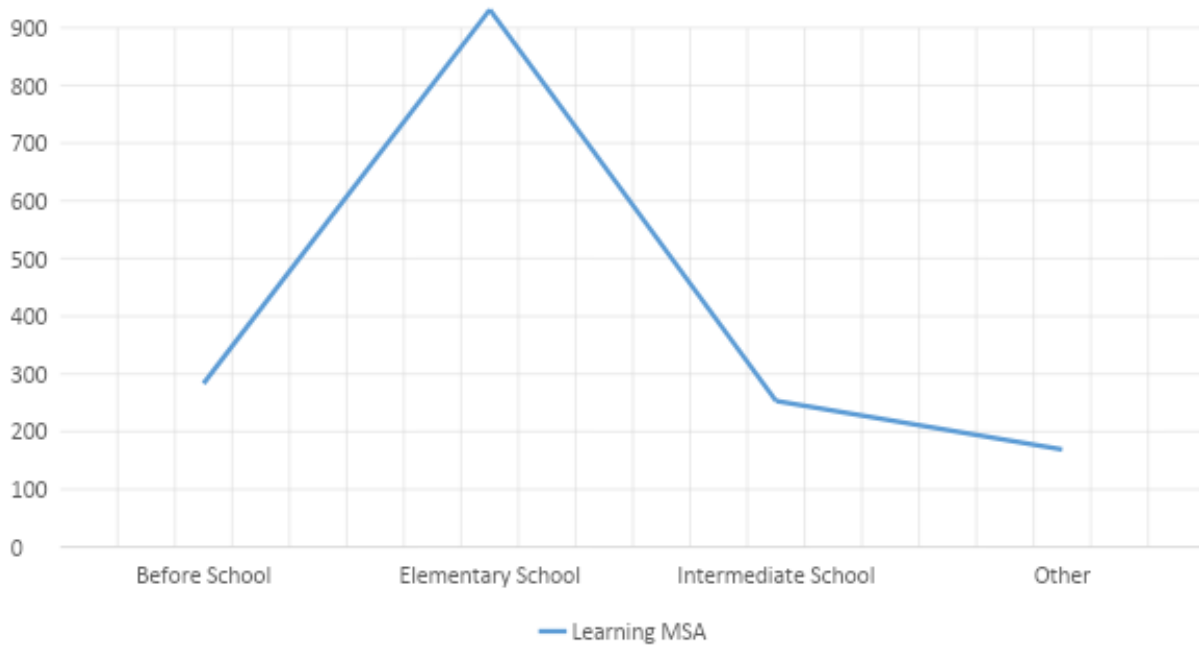
Q7. Age of participants when they learned Modern Standard Arabic

Participants' Age when learned MSA

Age	Count
2-3	30
4-5	145
6-7	449
8-10	323
11-12	148
13+	237
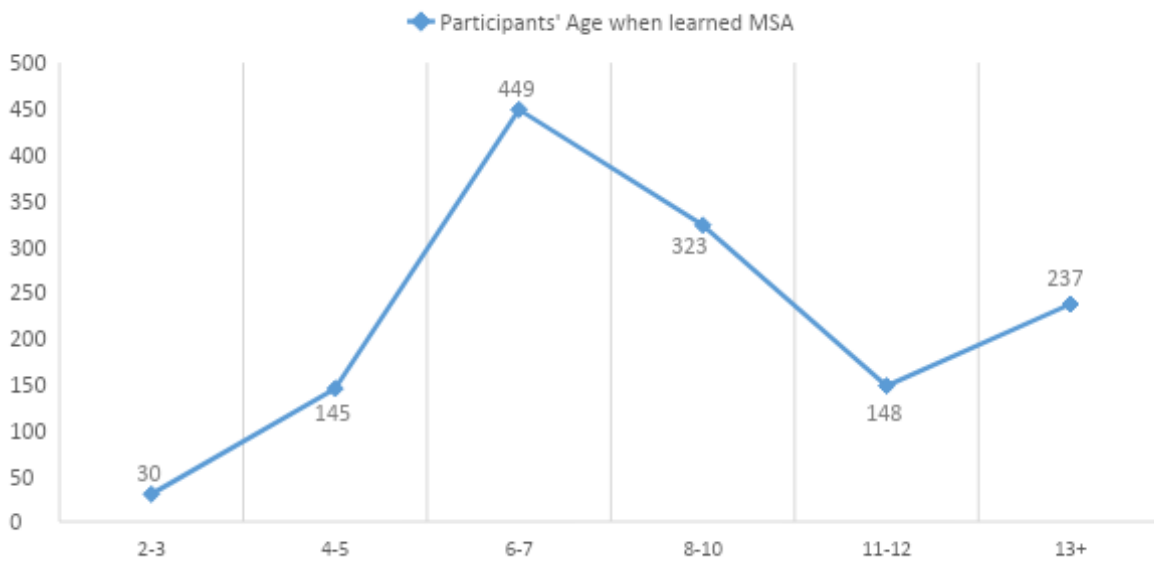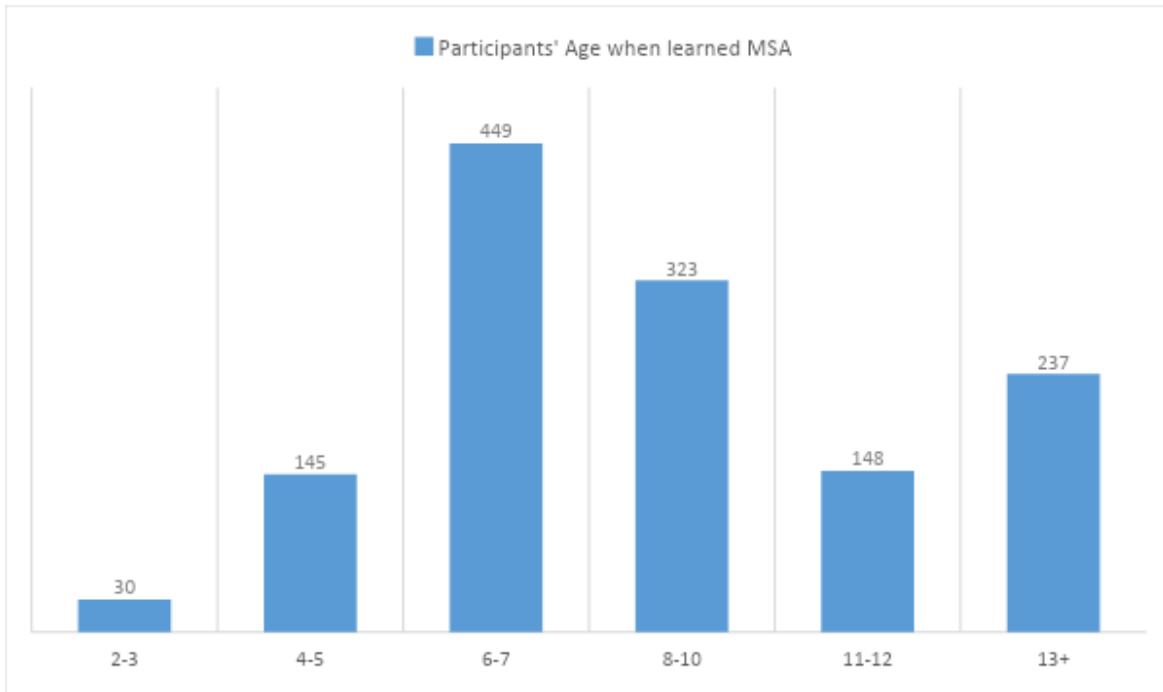
Q8.   Participants Self-evaluation of Modern Standard Arabic
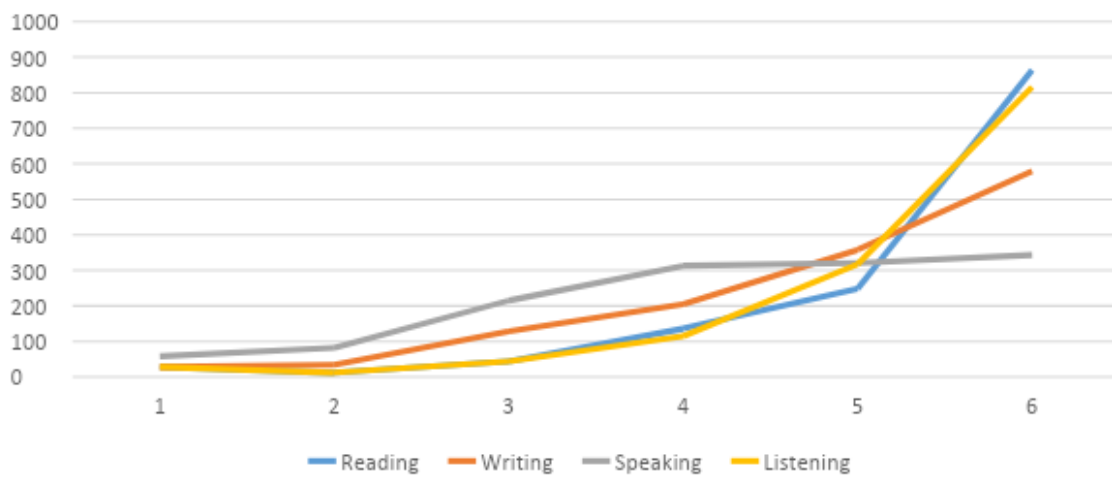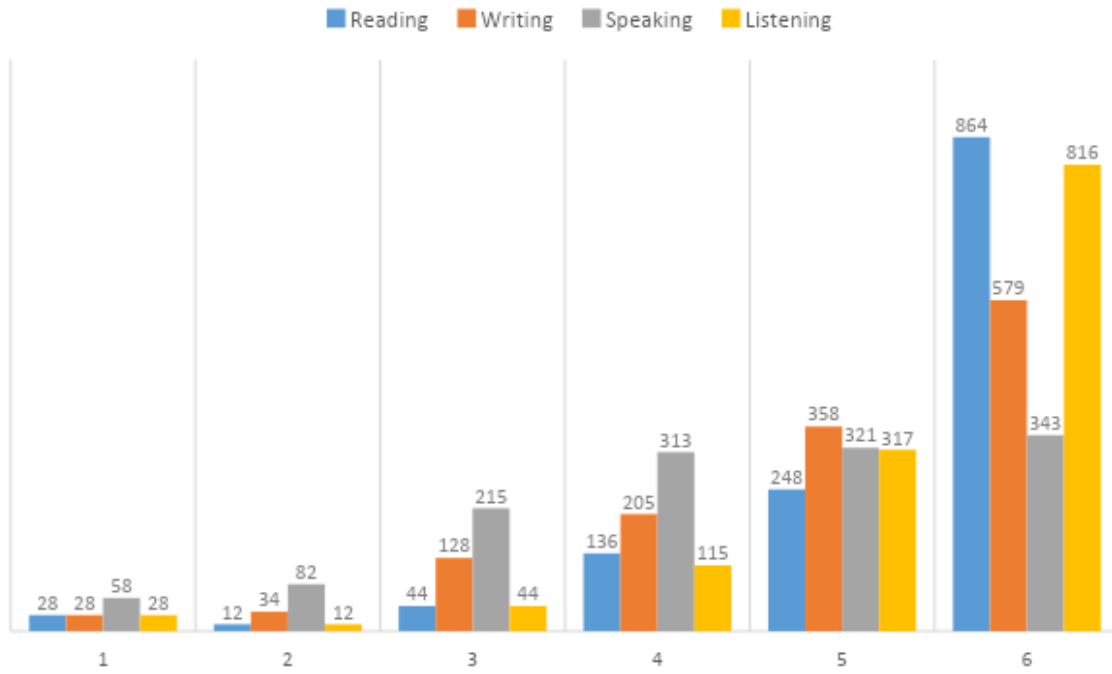
	1	2	3	4	5	6	Total
Reading	28	12	44	136	248	864	1332
Writing	28	34	128	205	358	579	1332
Speaking	58	82	215	313	321	343	1332
Listening	28	12	44	115	317	816	1332

	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Reading	1	6	5.37	1.08	1.16	1332	7152
Writing	1	6	4.93	1.24	1.53	1332	6564
Speaking	1	6	4.34	1.40	1.95	1332	5782
Listening	1	6	5.35	1.06	1.13	1332	7125

Q9.   What is locative adverbs that are used for far away object:
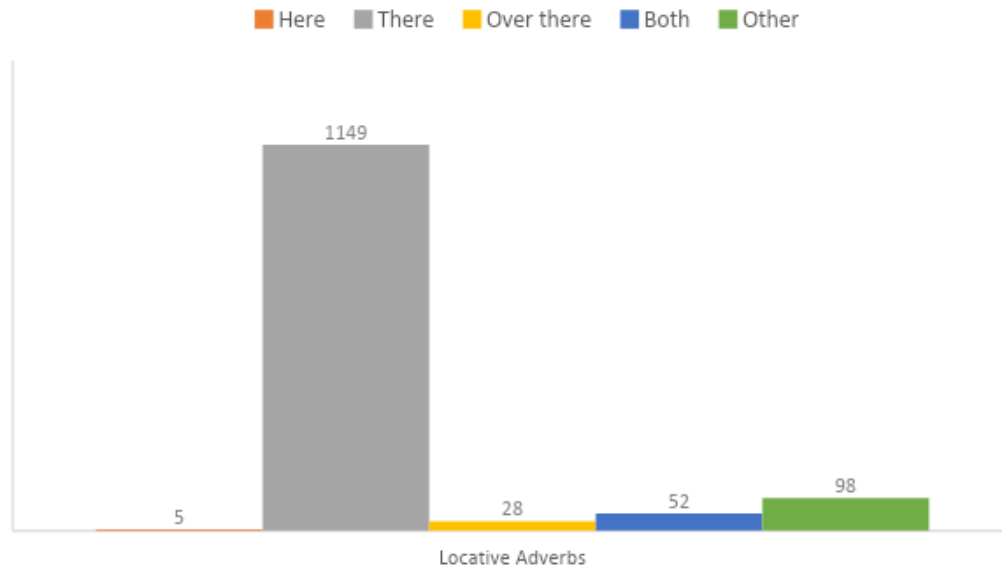
Locative Adverb	Response	%
Here	5	0.38%
There	1149	86.26%
Over there	28	2.10%
Both	52	3.90%
Others	98	7.36%
Total	1332	100%

Q10. Point to an object and say the suitable locative adverb.
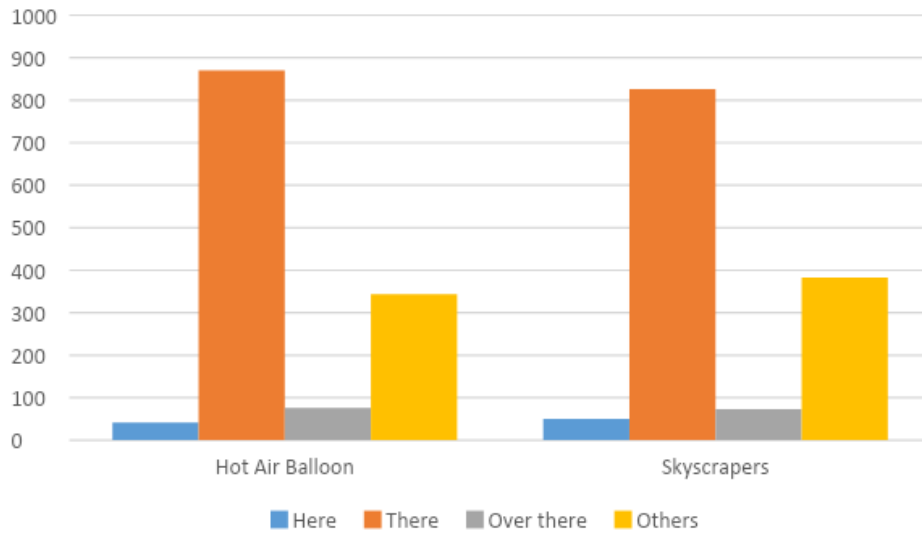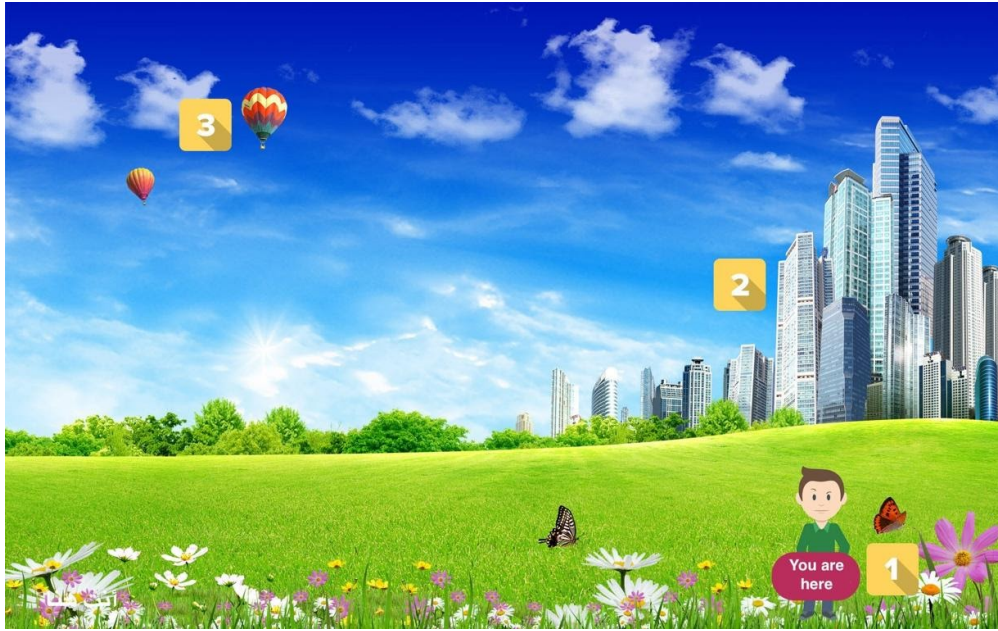
	here	there	over there	others	total
Hot Air Balloon	42	870	76	344	1332
Skyscrapers	50	826	73	383	1332

Q11. Point to an object and say the suitable locative adverb.
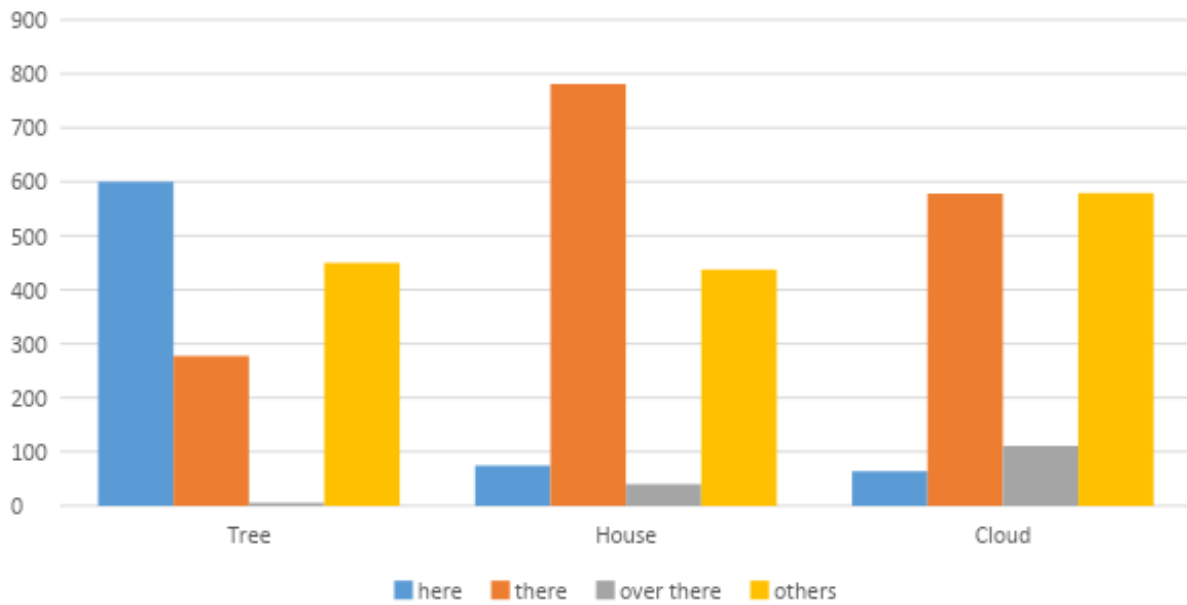
	Here	There	Over there	Others	Total
Tree	600	277	5	450	1332
House	74	781	40	437	1332
Cloud	64	578	111	579	1332

Q12. Is it natural to say the following sentence?
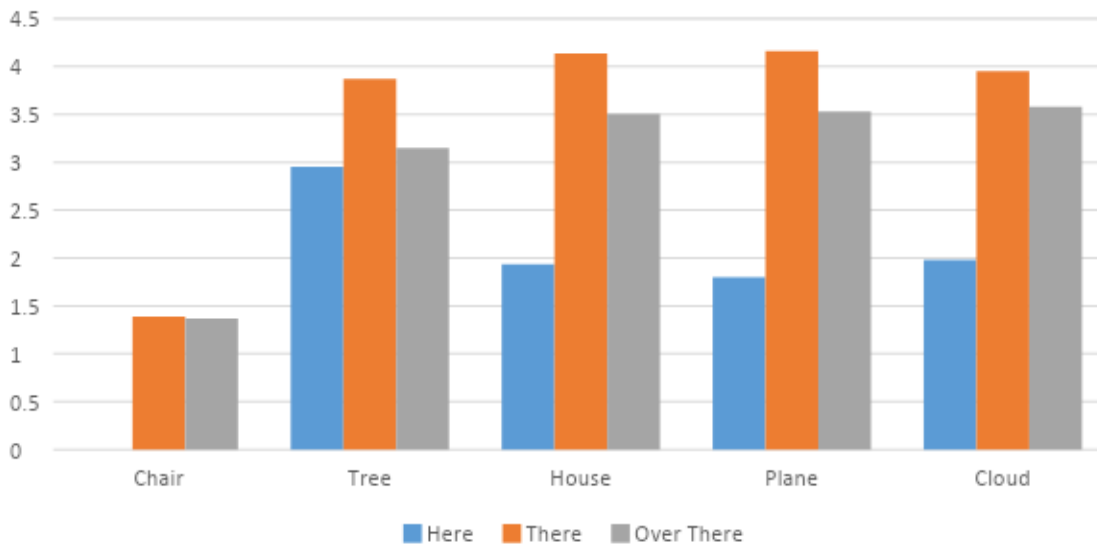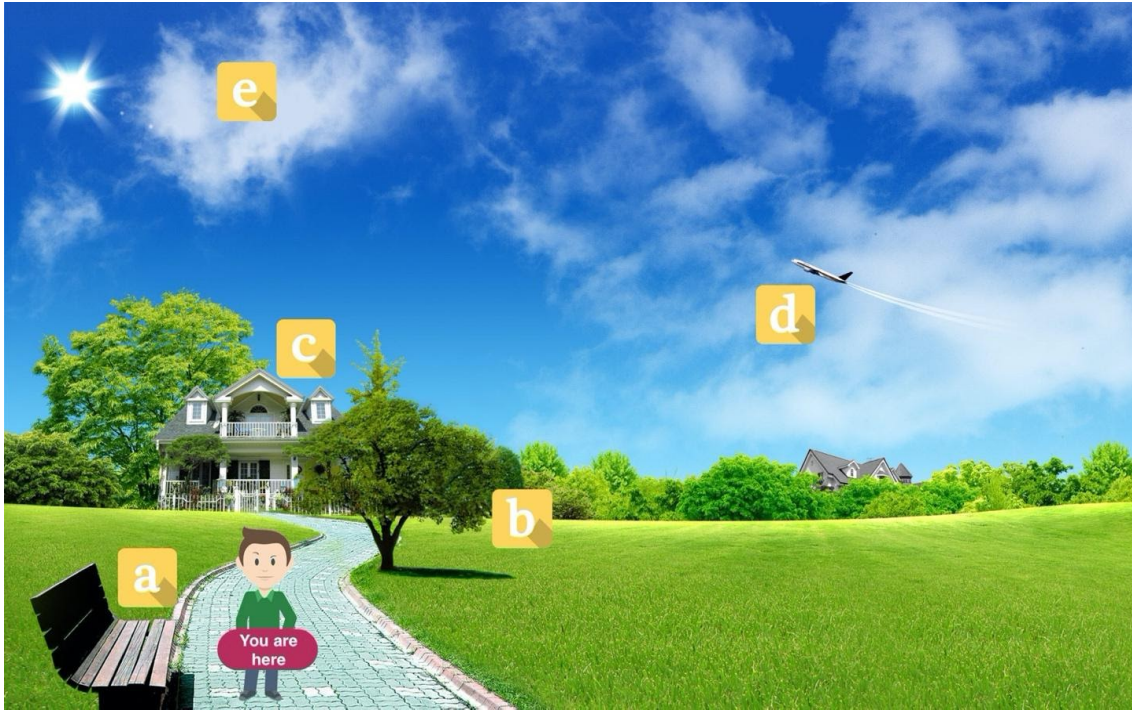
	Here	There	Over There	total
Chair	--	1.39	1.37	1332
Tree	2.95	3.87	3.15	1332
House	1.94	4.14	3.51	1332
Plane	1.80	4.16	3.53	1332
Cloud	1.98	3.95	3.58	1332

The average natural rating of acceptance (5 highest - 1 lowest)

		Here	*There*	*Over There*	*total*
Chair	*Average*		1.39	1.37	1332
	SD	--	1.05	1.03	
	Variance		1.11	1.07	
Tree	*Average*	2.95	3.87	3.15	1332
	SD	1.49	1.38	1.50	
	Variance	2.22	1.91	2.26	
House	*Average*	1.94	4.14	3.51	1332
	SD	1.35	1.29	1.53	
	Variance	1.81	1.67	2.34	
Plane	*Average*	1.80	4.16	3.53	**1332**
	SD	1.34	1.25	1.53	
	Variance	1.79	1.55	2.34	
Cloud	*Average*	1.98	3.95	3.58	1332
	SD	1.47	1.43	1.54	
	Variance	2.17	2.05	2.37	

Q13. What is the difference between *hunaka* 'there' and *hunalika* 'over there' in your opinion?

Q14. If there is a difference between there and over there in terms of distance, which one is further than the other?
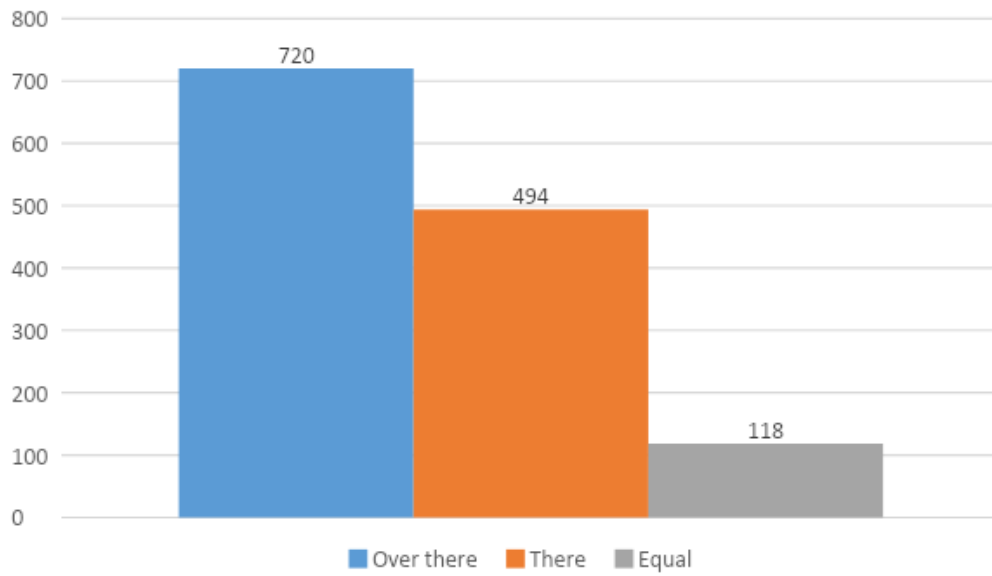
Choice	Participants	%
Over there	720	54.05%
Over	494	37.09%
Equal	118	8.86%
Total	1332	100%

Exp2 Q1: Age of participants

Age of Participants
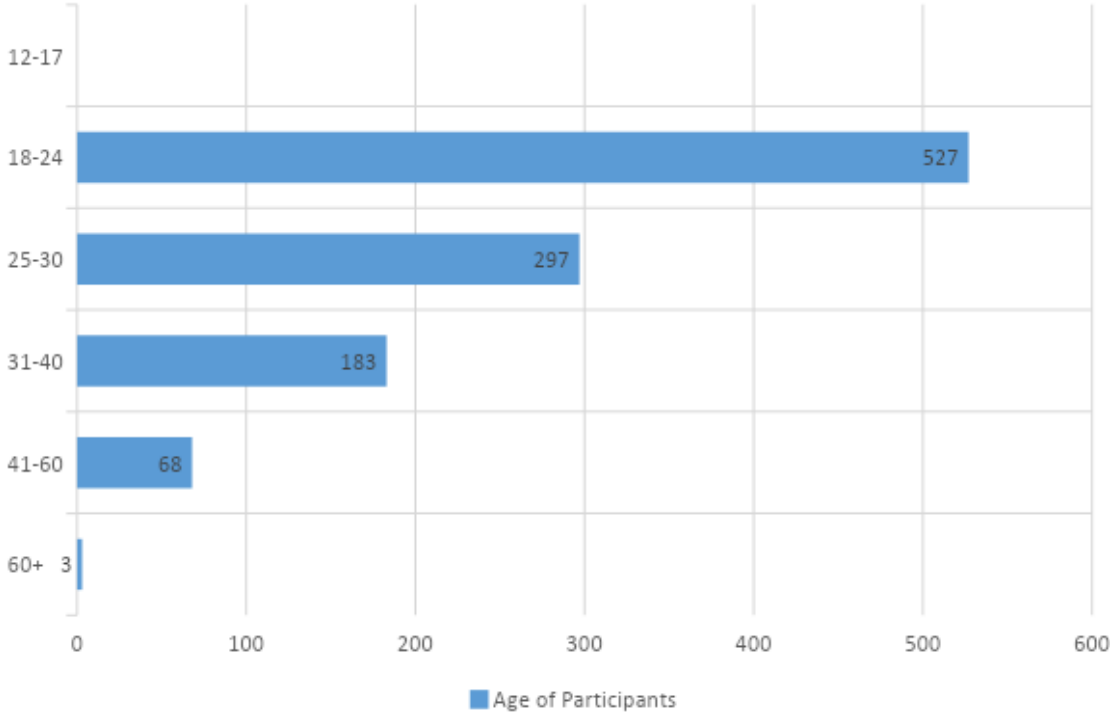
Age	Count
18-24	527
25-30	297
31-40	183
41-60	68
60+	3
total	1078

Exp2 Q2: Education level

Education level	Count
Master's or doctorate's degree	59
Bachelor's degree	542
High school diploma	349
Less than high school diploma	51
Did not complete school	41
Others	36
Total	1078
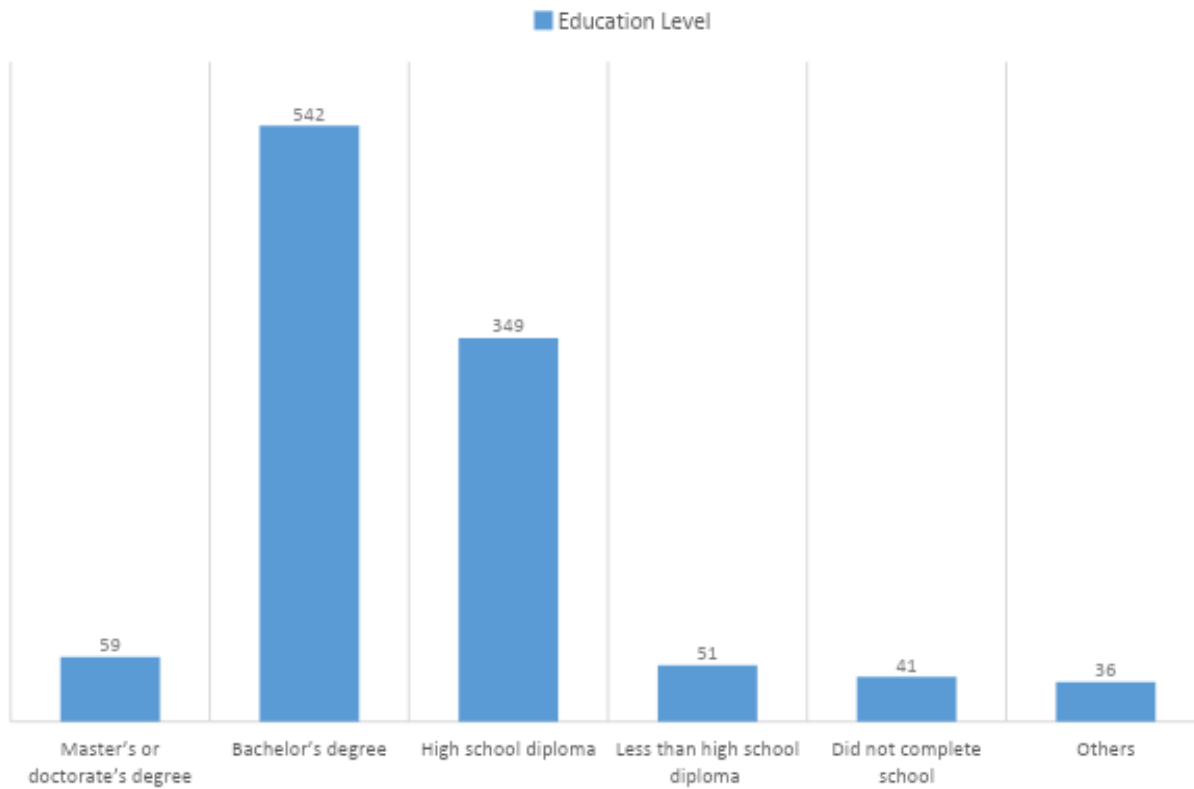
Exp2 Q3: Country of the participants

Country	Count
Saudi Arabia	708
Iraq	125
Egypt	28
Kuwait	24
Yemen	22
United Arab Emirates	20
Libya	18
Oman	16
Syria	15
Sudan	11
Jordan	10
Palestine	9
Morocco	8
Others	64
Total	1078
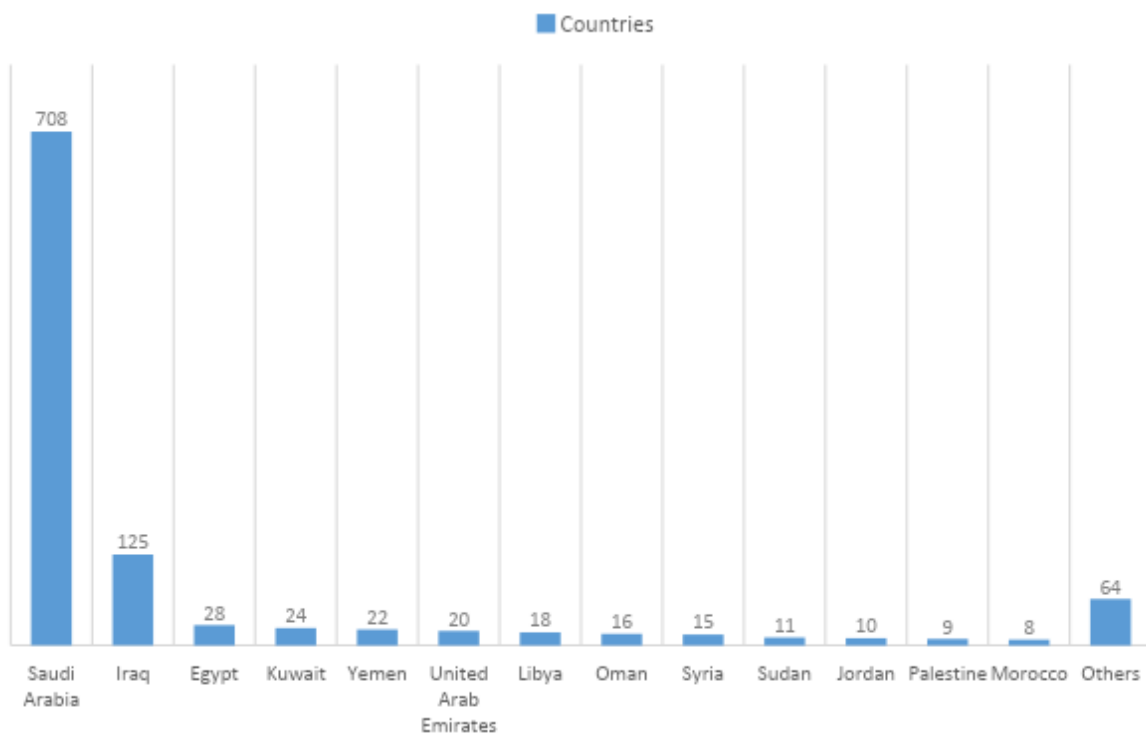
Exp2 Q4: City of the participants

City	Region	Count
Riyadh	Capital & Central Region of Saudi Arabia	211
Jeddah	Western Region of Saudi Arabia	76
Qassim	Central Region of Saudi Arabia	55
Baghdad	Capital & Central Region of Iraq	48
Mecca	Western Region of Saudi Arabia	47
Madinah	Western Region of Saudi Arabia	30
Ahsa	Eastern Region of Saudi Arabia	25
Dammam	Eastern Region of Saudi Arabia	25
Abha	Southern Region of Saudi Arabia	24
Taif	Western Region of Saudi Arabia	21
Basrah	Southern Region of Iraq	15
Tabuk	Northern Region of Saudi Arabia	14
Hail	Central Region of Saudi Arabia	13
Jazan	Southern Region of Saudi Arabia	12
Cairo	Central Region of Egypt	11
Others	---	451
Total	---	1078
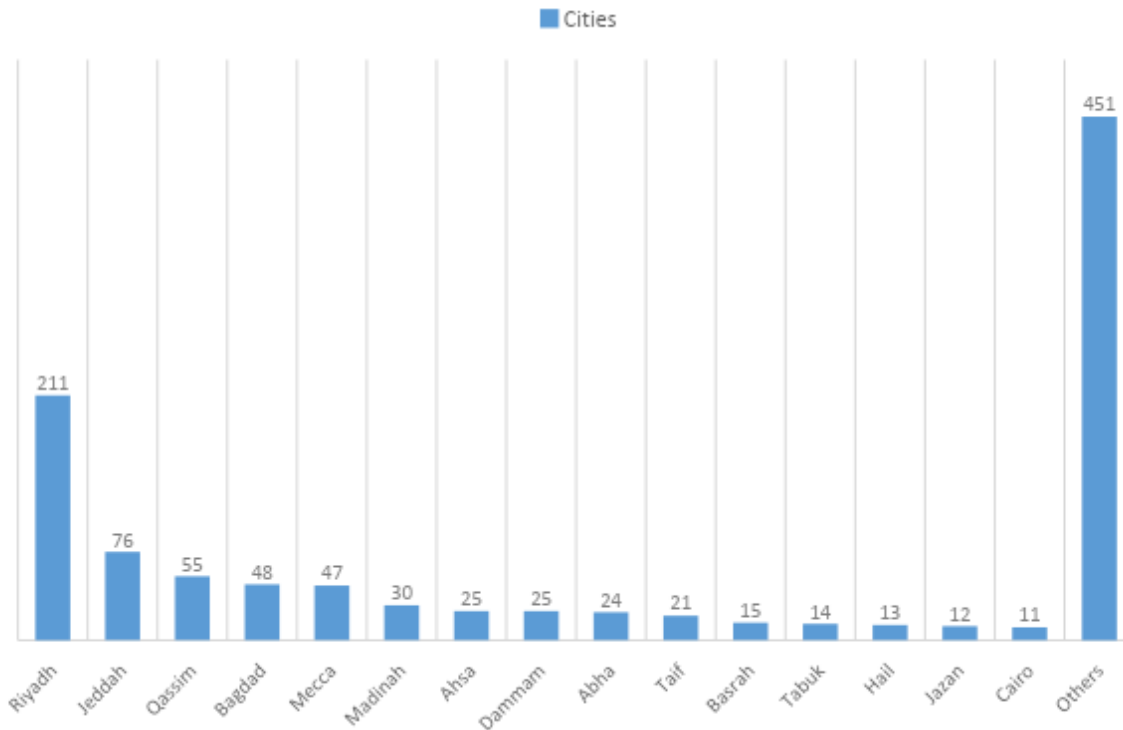
Exp2 Q5: Dialect of the participants

City	Region	Count
Najdi	*Central Region of Saudi Arabia*	332
Hijazi	*Western Region of Saudi Arabia*	181
Jonobi	*Southern Region of Saudi Arabia*	94
Iragi	*Region of Iraq*	29
Shamali	*Northern Region of Saudi Arabia*	23
Shargawi	*Eastern Region of Saudi Arabia*	22
Qassimi	*Central Region of Saudi Arabia*	19
Kuwaiti	*Region of Kuwait*	18
Yemini	*Region of Yemen*	18
Hasawi	*Eastern Region of Saudi Arabia*	10
Masri	*Region of Egypt*	7
Emarati	*Region of United Arab Emirates*	7
Shami	*Region of Syria and Lebanon*	7
Others	*---*	311
Total	*---*	1078
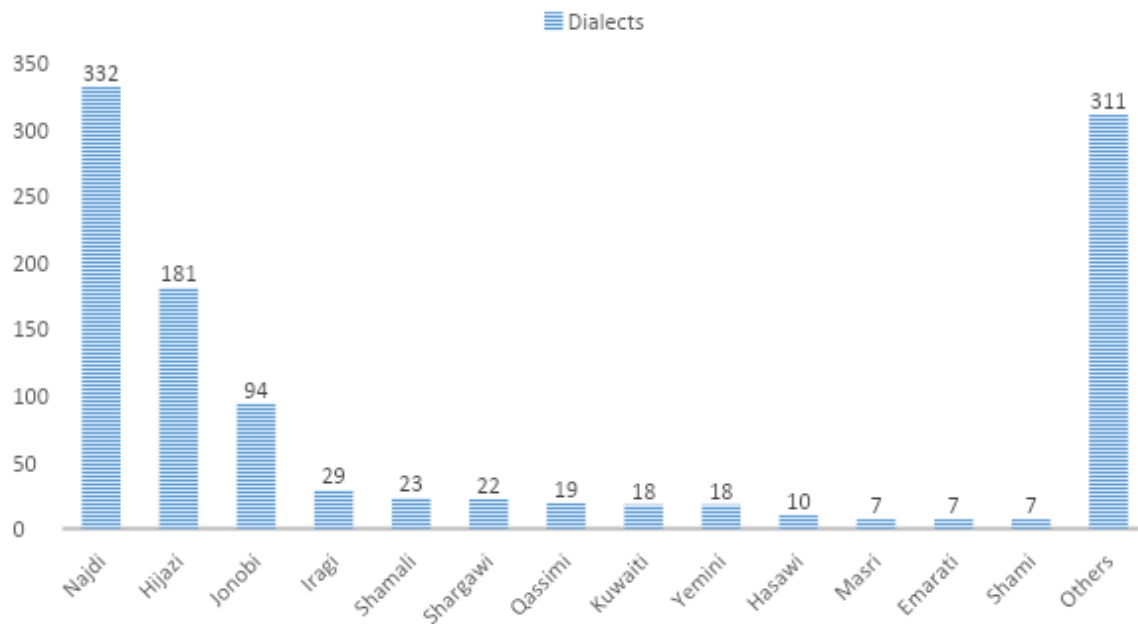
Exp2 Q6: When did you learn Modern Standard Arabic?
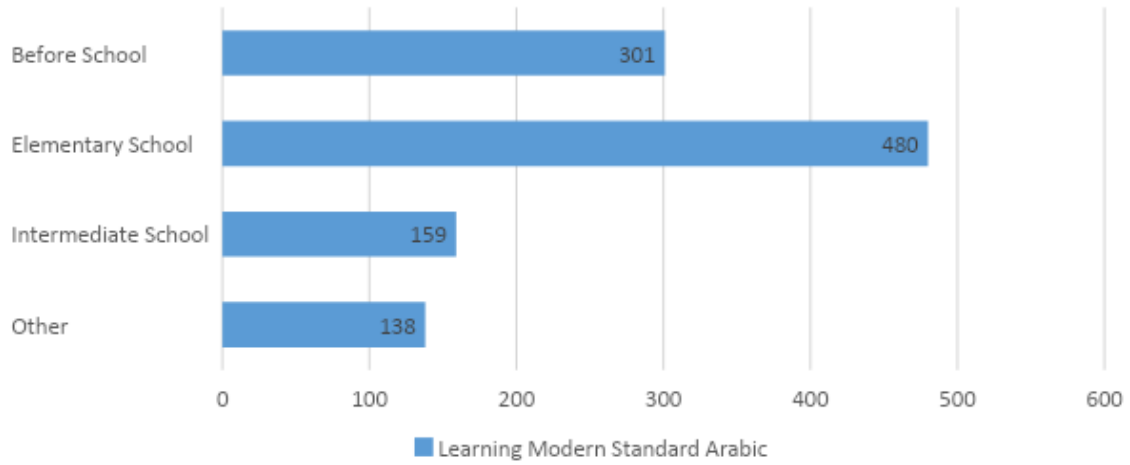
Learning MSA	Count
Before School	301
Elementary School	480
Intermediate School	159
Other	138
Total	1078
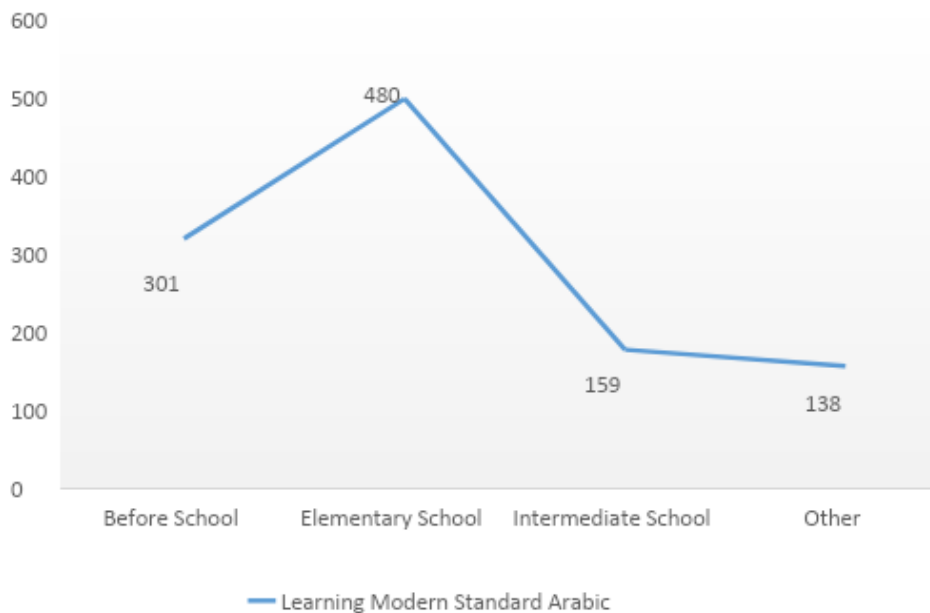
Exp2 Q7: What was your age when you learned Modern Standard Arabic?

Age of Participants when learning MSA
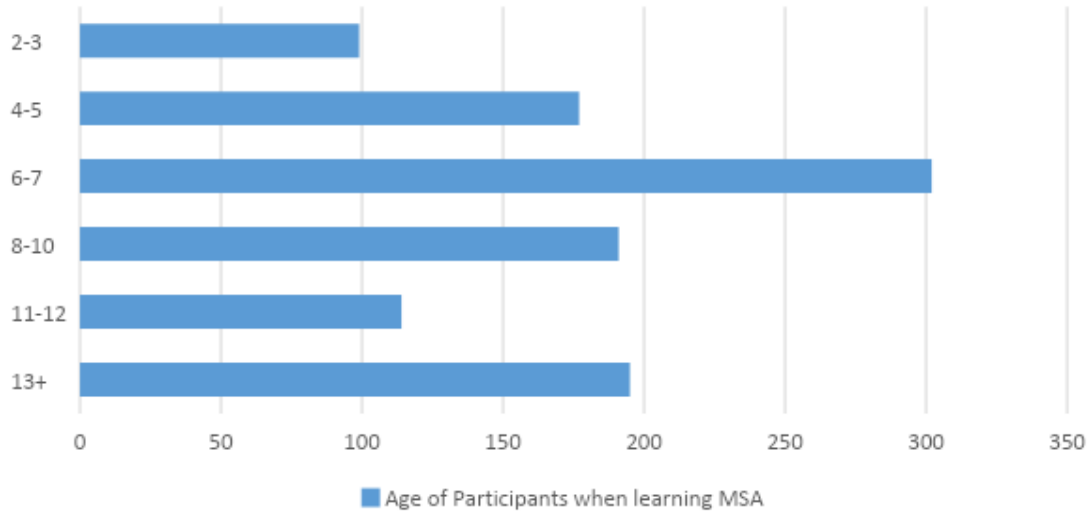
Age of Participants when learning MSA	Count
2-3	99
4-5	177
6-7	302
8-10	191
11-12	114
13+	195

Age of Participants when learning MSA
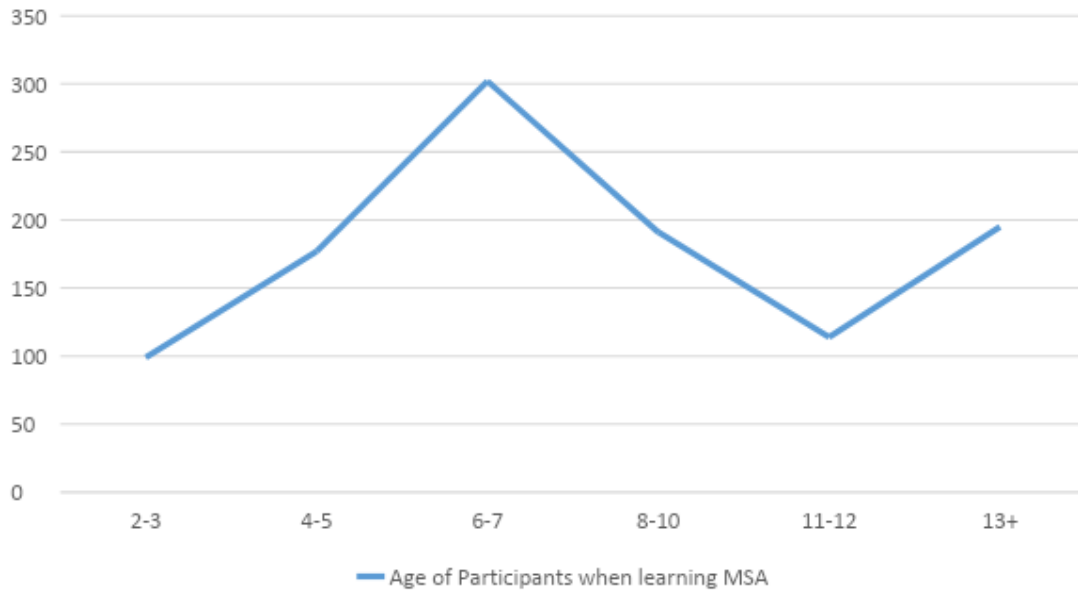
Exp2 Q8: Participants Self-evaluation of Modern Standard Arabic
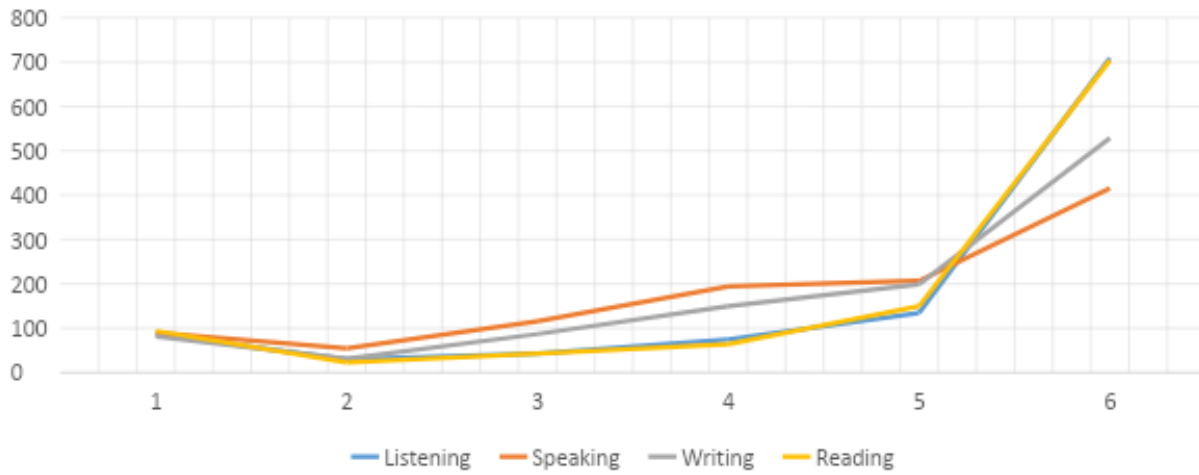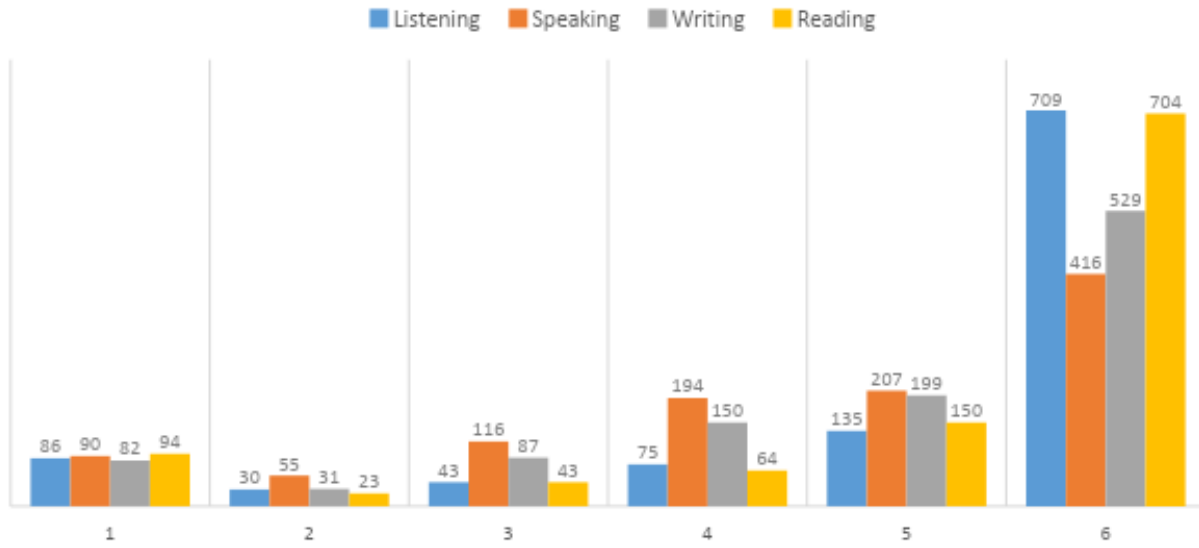
Field	Mean	Responses	Max	Min	Standard Deviation	Variance
Reading	5.10	1078.00	6.00	1.00	1.56	2.45
Writing	4.80	1078.00	6.00	1.00	1.55	2.39
Speaking	4.50	1078.00	6.00	1.00	1.60	2.54
Listening	5.11	1078.00	6.00	1.00	1.55	2.40

Field	1	2	3	4	5	6
Count (Reading)	94	23	43	64	150	704
Count (Writing)	82	31	87	150	199	529
Count (Speaking)	90	55	116	194	207	416
Count (Listening)	86	30	43	75	135	709

Exp2 Q9: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?


Example:

1) The chair is here.
2) The house is ....
3) The airplane is ....

Locative Adverb	House - Visible	House - Invisible	Airplane - Visible	Airplane - Invisible
Here	88	27	72	22
There	476	315	283	224
Over There	12	31	58	47
Others	502	705	665	785
Total	1078	1078	1078	1078
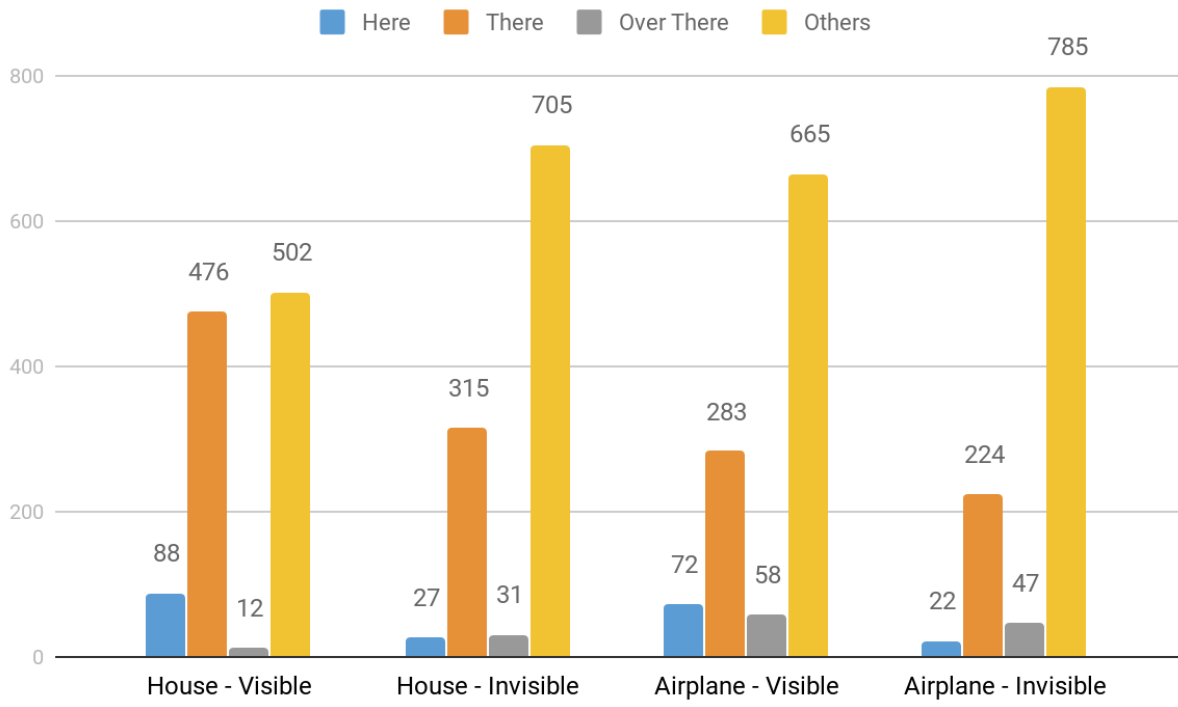
Exp2 Q10: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?


2) The house is ....
3) The stairs are ....

	House - Visible	House - Invisible
Over There	20	18
There	349	292
Here	57	47
Behind	---	95
Total	426	452
Others	652	626

Here — House - Visible: 20, House - Invisible: 18
There — House - Visible: 349, House - Invisible: 292
Over There — House - Visible: 57, House - Invisible: 47
Behind — House - Invisible: 95
Others — House - Visible: 426, House - Invisible: 452
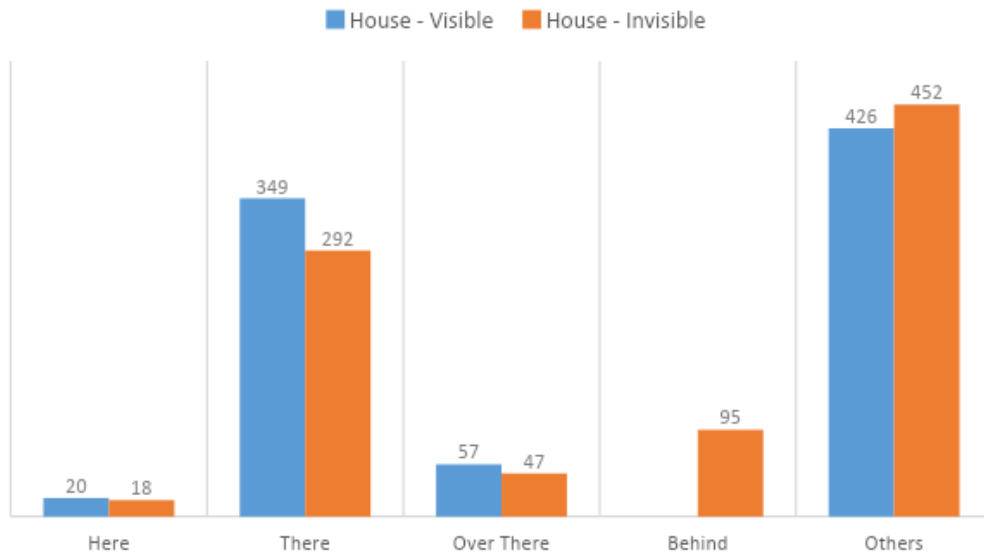
Exp2 Q11: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?

	House - Visible	House - Invisible
Here	28	26
There	357	344
Over There	63	57
Others	630	651
Total	1078	1078
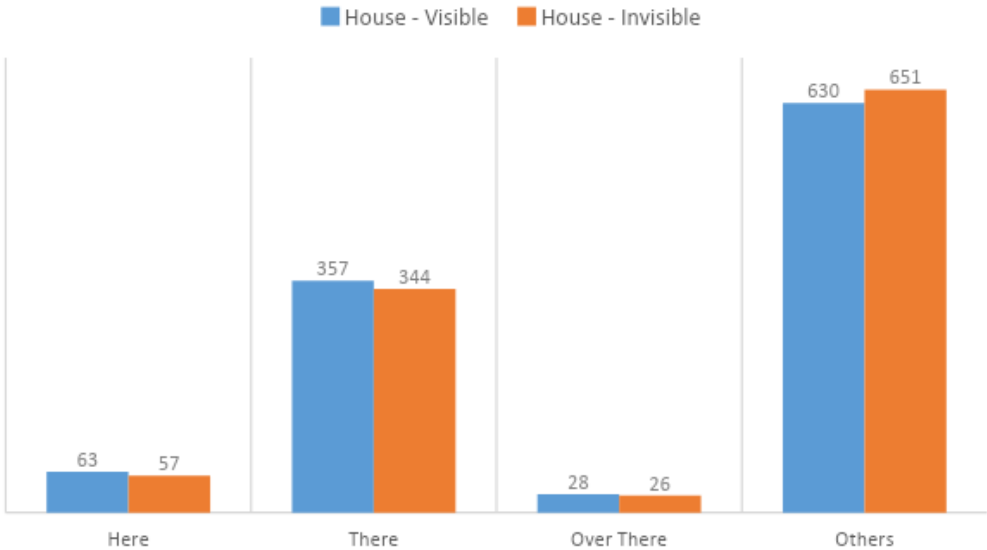
Exp2 Q12: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?
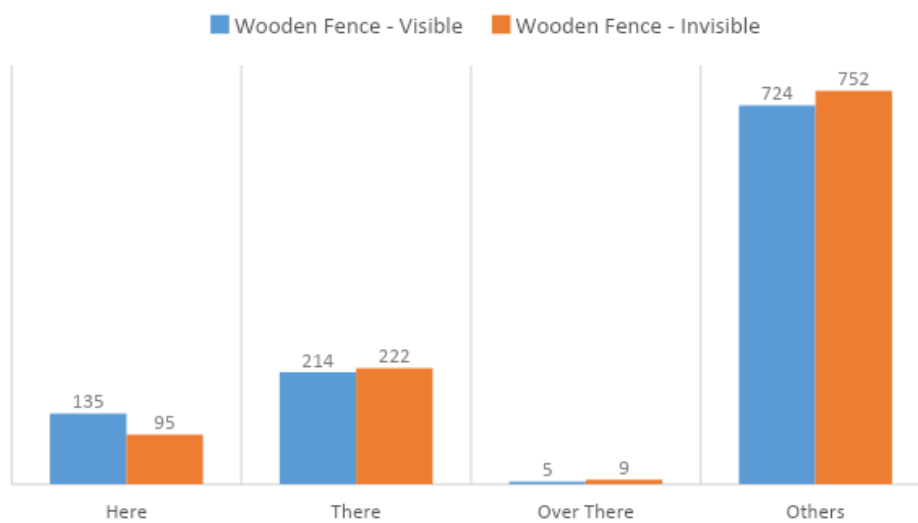

	House - Visible	House - Invisible
Here	47	34
There	309	252
Over There	18	34
Others	704	758
Total	1078	1078
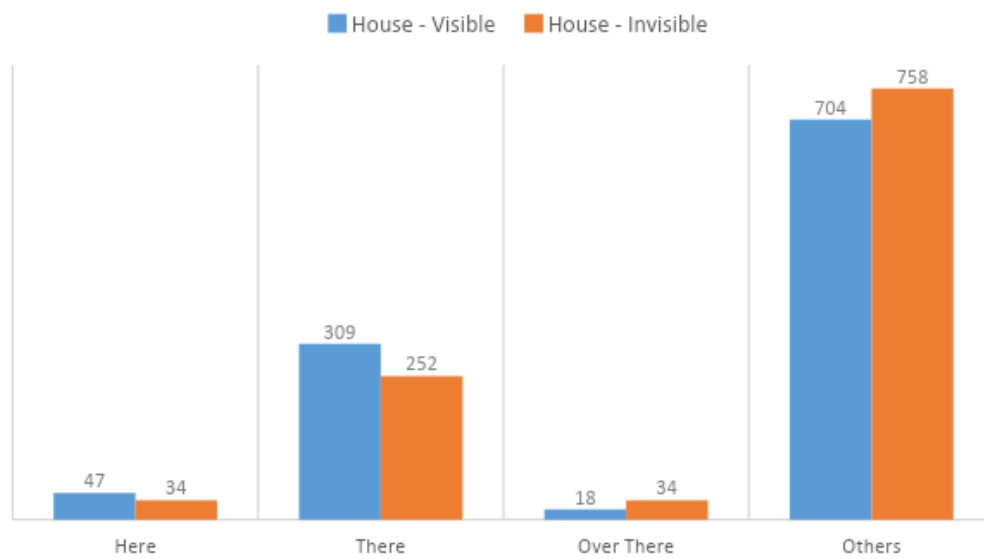
Exp2 Q13: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?


|	Dog	Cat	Phone
Here	348	356	282
There	20	49	8
Over There	1	1	1
under	436	281	---
Inside	---	---	269
Others	273	391	518
Total	1078	1078	1078
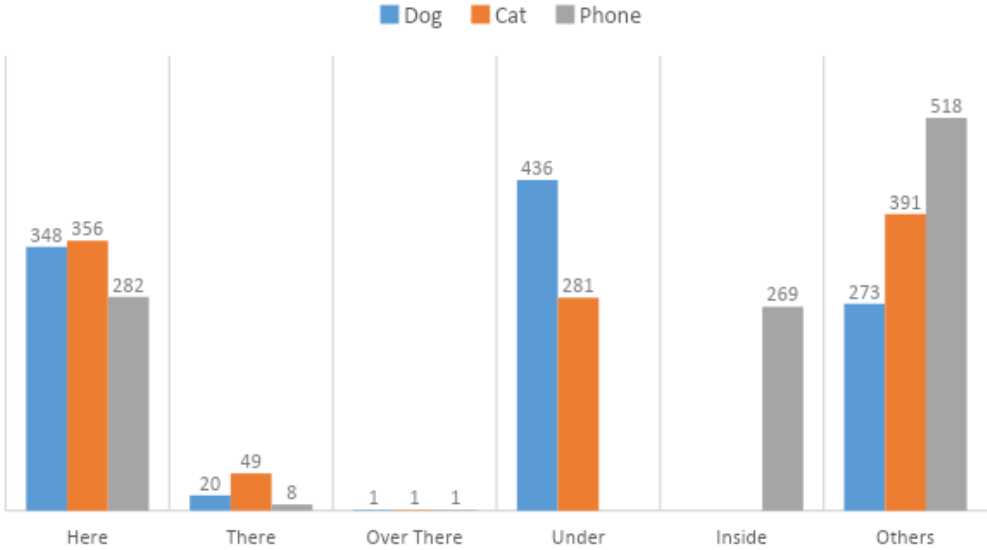
Exp2 Q14: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?

	House - Visible	*House - Invisible*
Here	23	28
There	352	284
Over There	34	41
Others	669	725
Total	1078	1078
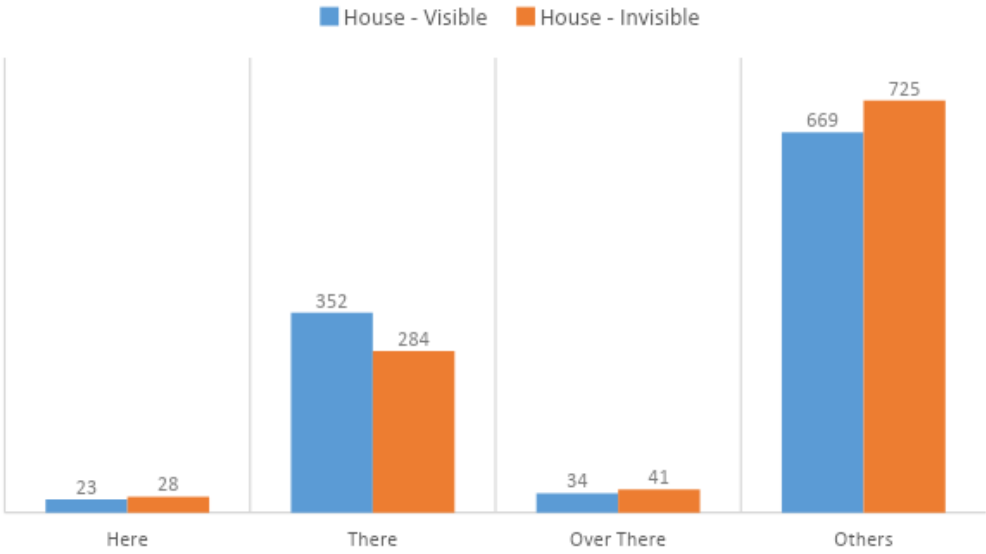
Exp2 Q16: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?


	Hot air balloon - Visible	*Hot Air Balloon - Invisible*
Here	22	23
There	260	246
Over There	39	46
Others	757	763
Total	1078	1078
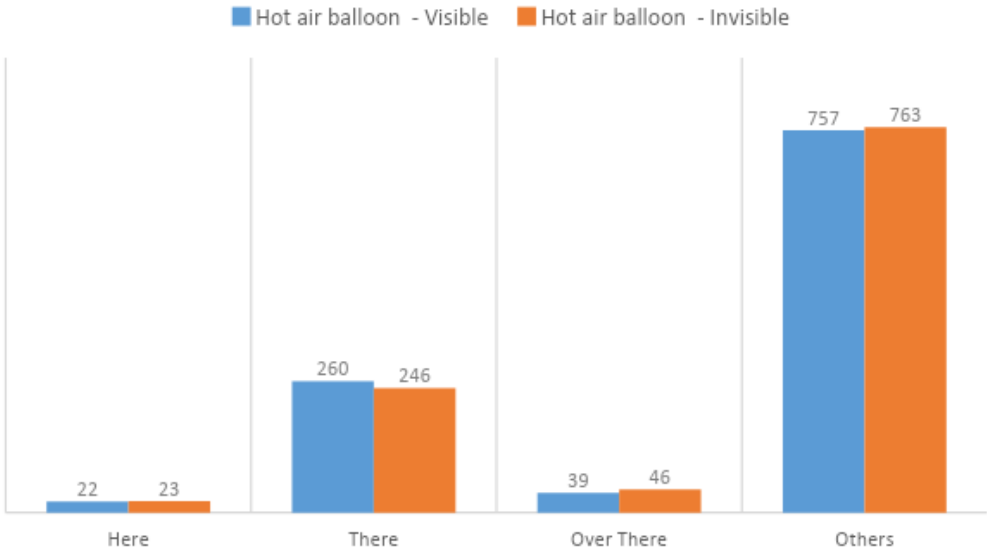
Exp2 Q19: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?

|	Wooden Fence - Visible	Wooden Fence - Invisible
Here	135	95
There	214	222
Over There	5	9
Others	724	752
Total	1078	1078

Exp2 Q21: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?

	Wooden Fence
Here	294
There	30
Over There	1
Others	753
Total	1078
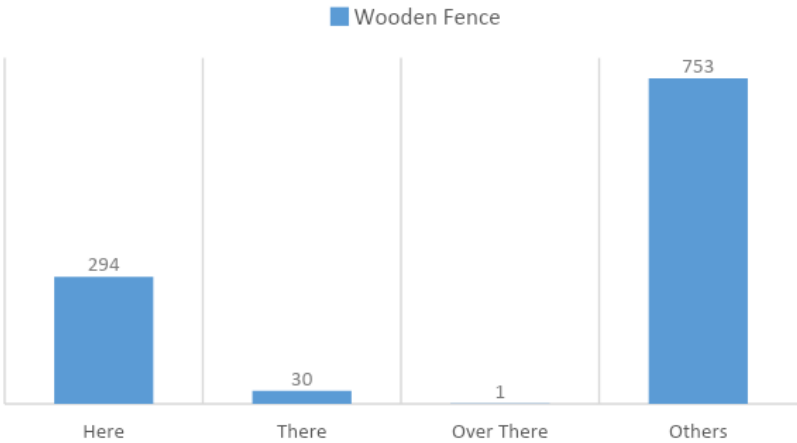
Exp2 Q22: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?
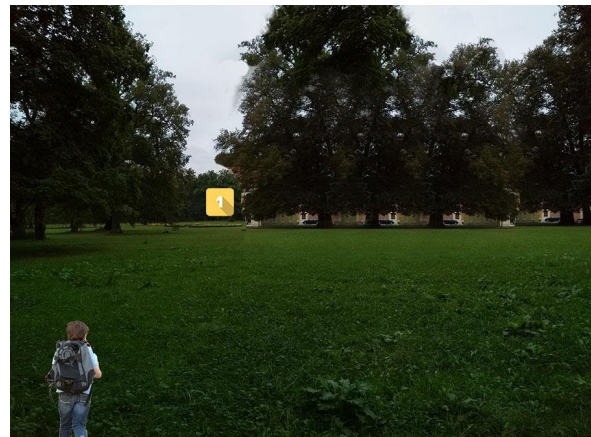
	House - visible	*House - Invisible*
Here	52	25
There	331	310
Over There	24	32
Others	671	711
Total	1078	1078
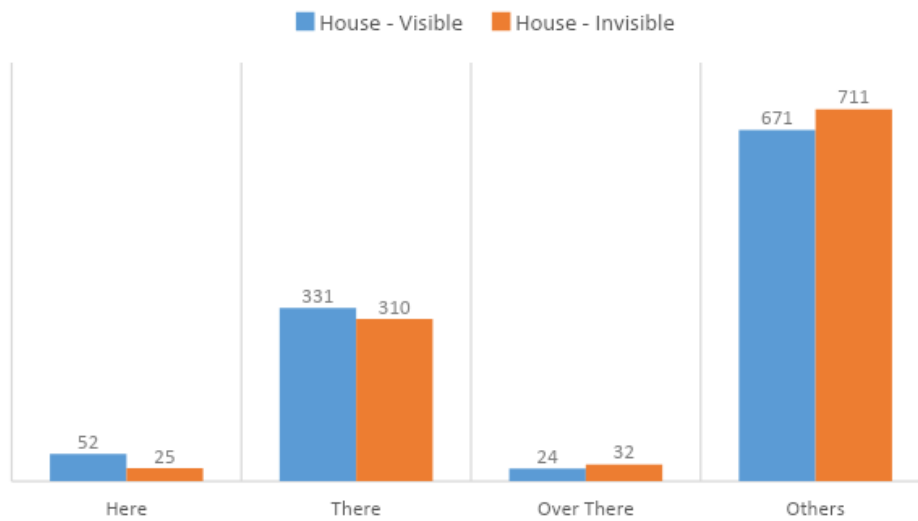
Exp2 Q24: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?

	Green Chair - Visible	Green Chair - Invisible
Here	39	32
There	385	342
Over There	8	20
Others	646	684
Total	1078	1078
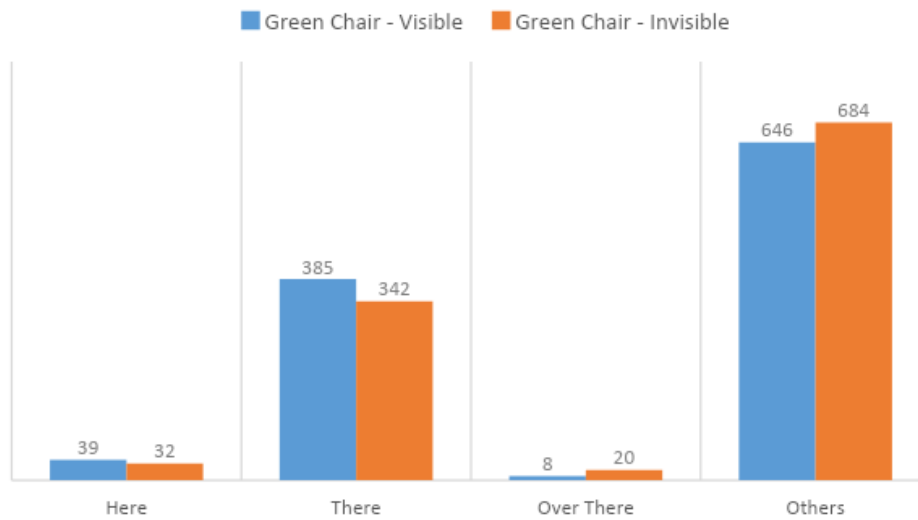
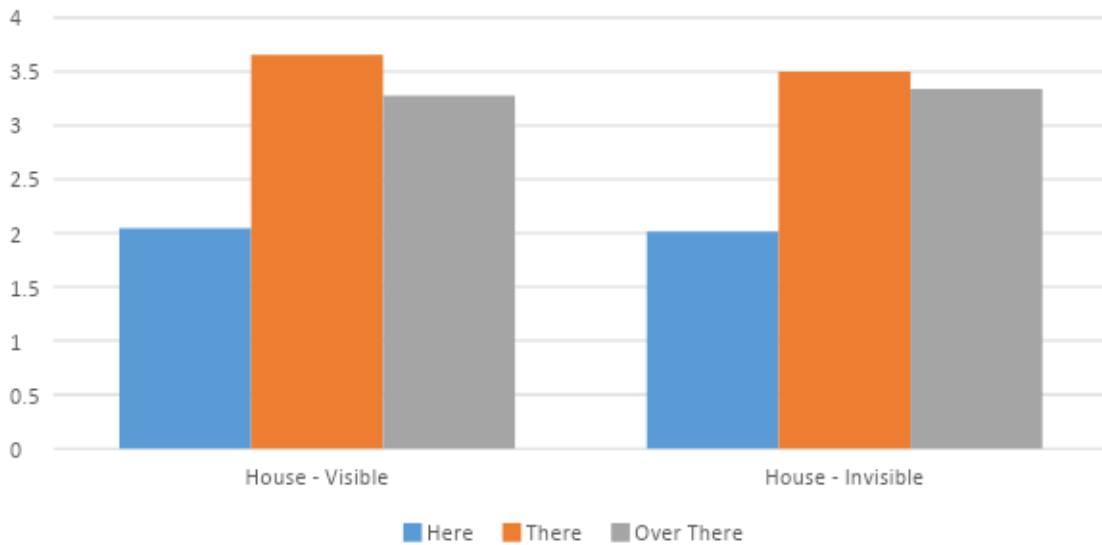Exp2 Q31: Is it natural to say the following locative adverb (5 highest - 1 lowest)?

Answered: 1) The chair is here   5/5

Exp2 Q32: Is it natural to say the following locative adverb (5 most natural - 1 least natural)?

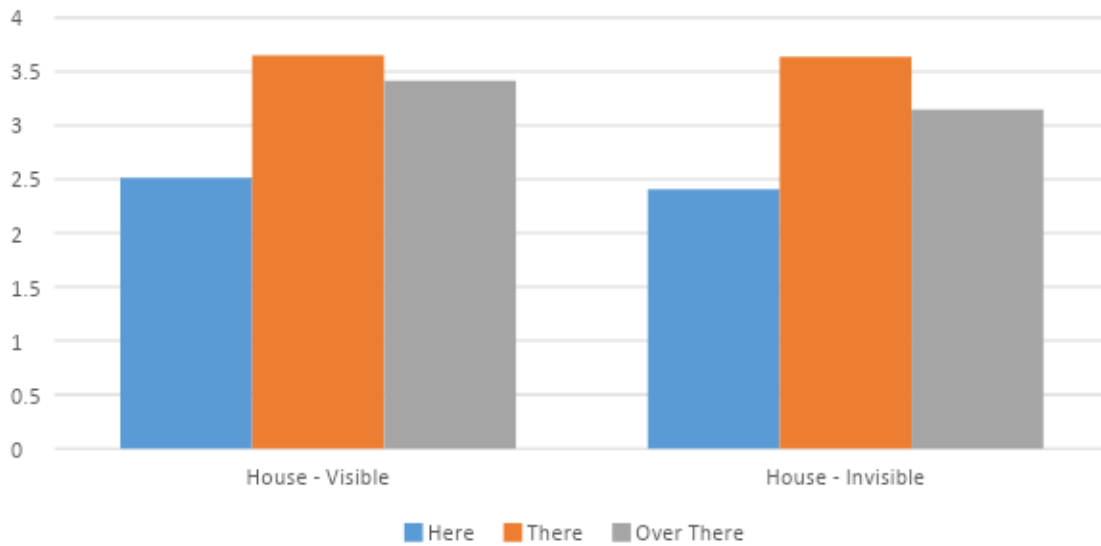| Locative Adverb	Visibility	Distance	Mean	Responses	Max	Min	Standard Deviation	Variance
Here	visible	Distal	2.05	1078.00	5.00	1.00	1.52	2.32
	invisible	Distal	2.01	1078.00	5.00	1.00	1.55	2.39
There	visible	Distal	3.65	1078.00	5.00	1.00	1.63	2.65
	invisible	Distal	3.50	1078.00	5.00	1.00	1.64	2.68
Over There	visible	Distal	3.27	1078.00	5.00	1.00	1.69	2.87
	invisible	Distal	3.34	1078.00	5.00	1.00	1.69	2.85

The referent is the house which is a distal referent

Exp2 Q33: Is it natural to say the following locative adverb (5 highest - 1 lowest)?

| Locative Adverb	Visibility	Distance	Mean	Responses	Max	Min	Standard Deviation	Variance
Here	Visible	Medial	2.51	1078.00	5.00	1.00	1.60	2.54
	Invisible	Medial	2.41	1078.00	5.00	1.00	1.58	2.48
There	Visible	Medial	3.65	1078.00	5.00	1.00	1.57	2.47
	Invisible	Medial	3.64	1078.00	5.00	1.00	1.58	2.51
Over There	Visible	Medial	3.41	1078.00	5.00	1.00	1.63	2.67
	Invisible	Medial	3.15	1078.00	5.00	1.00	1.63	2.65

The chart represents the mean value of the natural rating of the house referent which is located in a medial distance.

Exp2 Q34: Is it natural to say the following locative adverb (5 highest - 1 lowest)?

Locative Adverb	Visibility	Distance	Mean	Responses	Max	Min	Standard Deviation	Variance
Here	Invisible	Proximal	3.41	1078.00	5.00	1.00	1.67	2.79
There	Invisible	Proximal	2.33	1078.00	5.00	1.00	1.54	2.36
Over There	Invisible	Proximal	2.28	1078.00	5.00	1.00	1.53	2.34
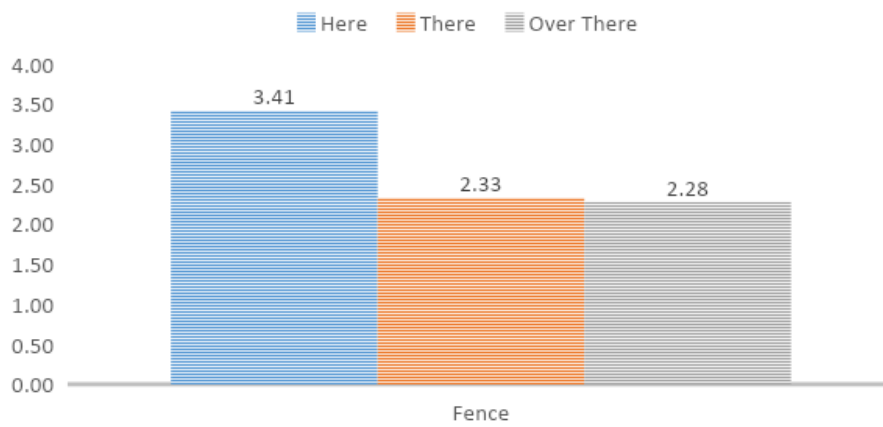
Exp3 Q1: Age of participants
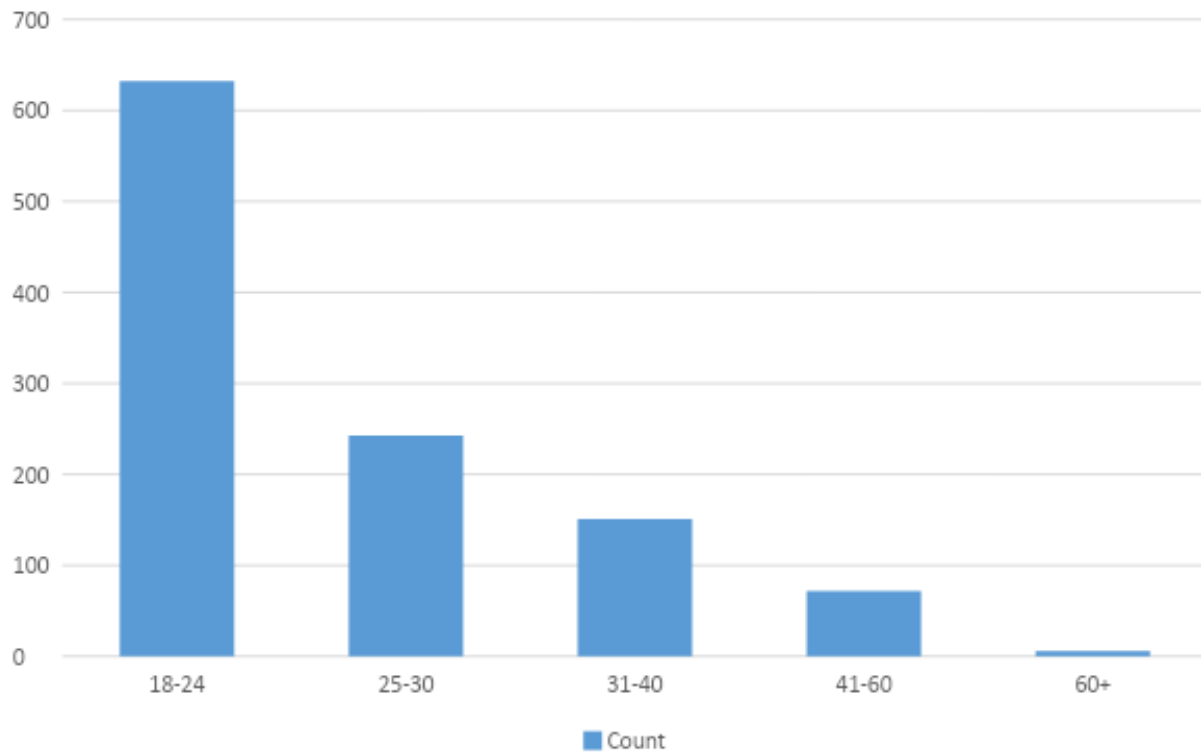
Age	Count
18-24	632
25-30	243
31-40	151
41-60	72
60+	6

Exp3 Q2: Education level
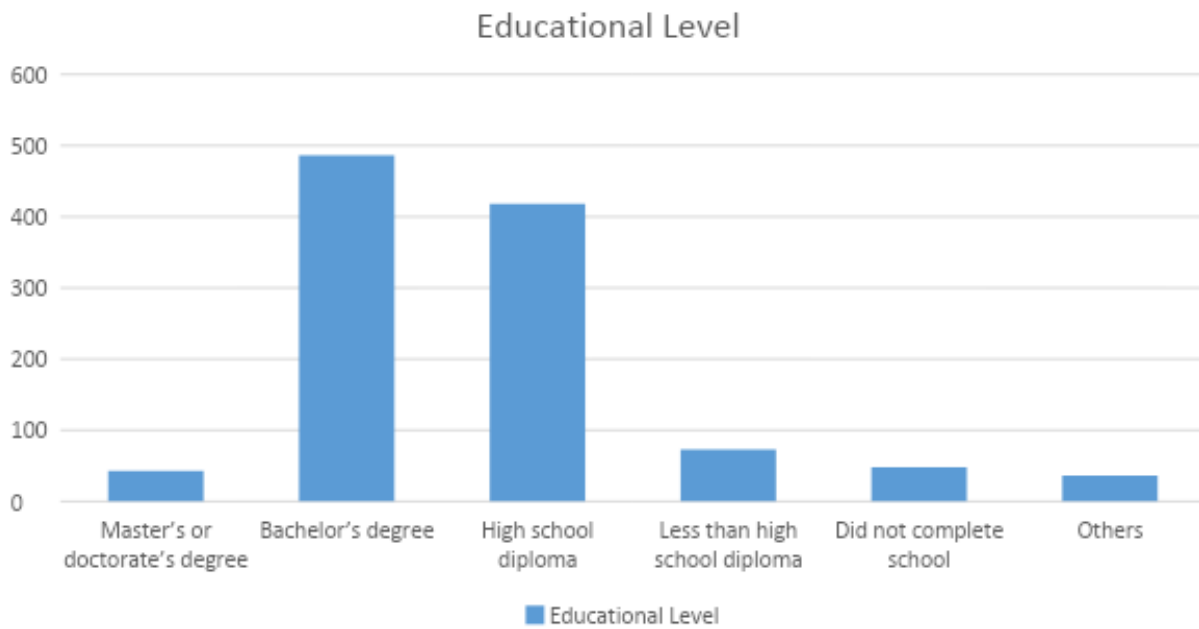
Educational Level

Educational Level	Count
Master's or doctorate's degree	43
Bachelor's degree	486
High school diploma	418
Less than high school diploma	73
Did not complete school	48
Others	36

Exp3 Q3: Country of the participants

COUNTRY	COUNT
SAUDI ARABIA	615
IRAQ	136
KUWAIT	48
EGYPT	45
UNITED ARAB EMIRATES	33
SYRIA	32
YEMEN	30
OMAN	24
OTHERS	141
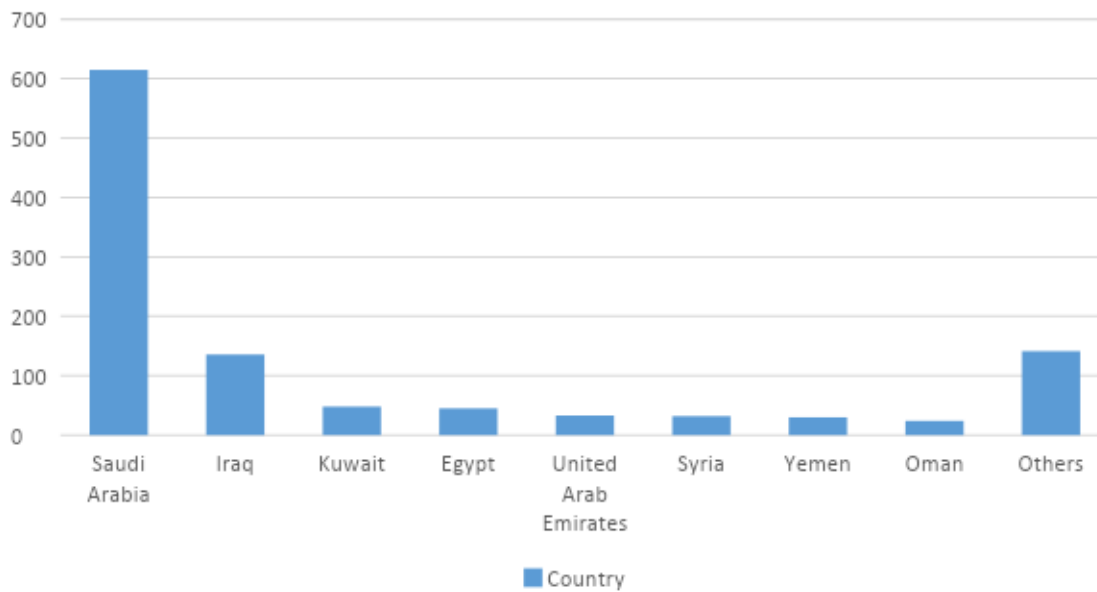
Exp3 Q4: City of the participants

CITY	COUNT
RIYADH	188
BAGHDAD	54
QASSIM	53
JEDDAH	49
MADINAH	29
MECCA	28
KUWAIT	27
TAIF	25
TABOUK	20
HAIL	18
BASRA	18
DAMMAM	17
AHSA	14
BAHAH	14
OTHERS	550
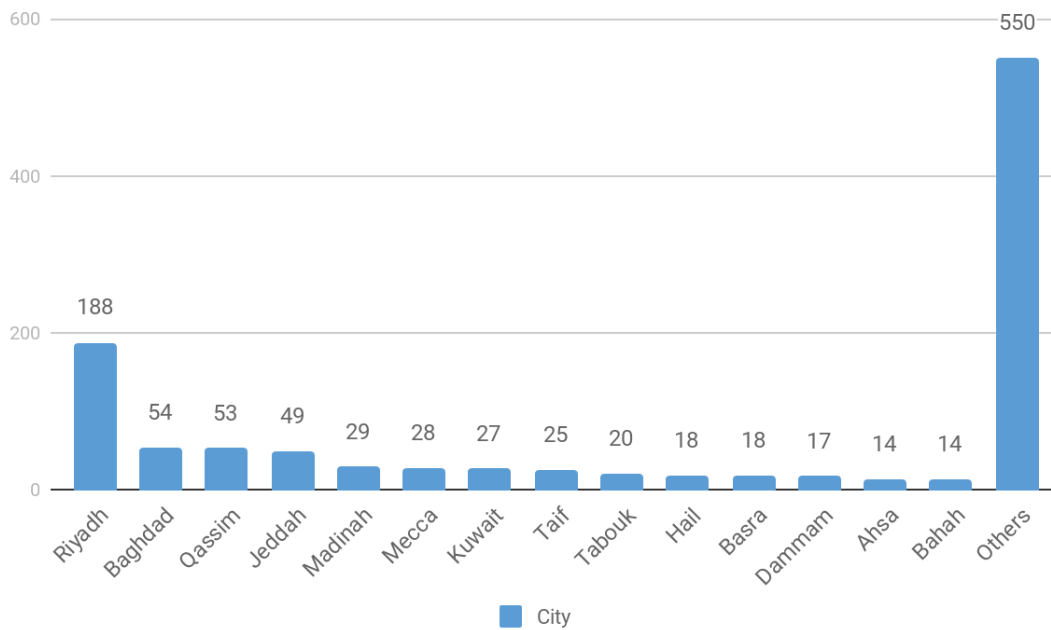
Exp3 Q5: Dialect of the participants

DIALECT	Count
NAJDI	284
HIJAZI	144
JANOBI	108
IRAQI	42
SHAMALI	37
SHARQI	20
Kuwaiti	19
Emarati	15
OMANI	13
YEMENI	13
Others	409
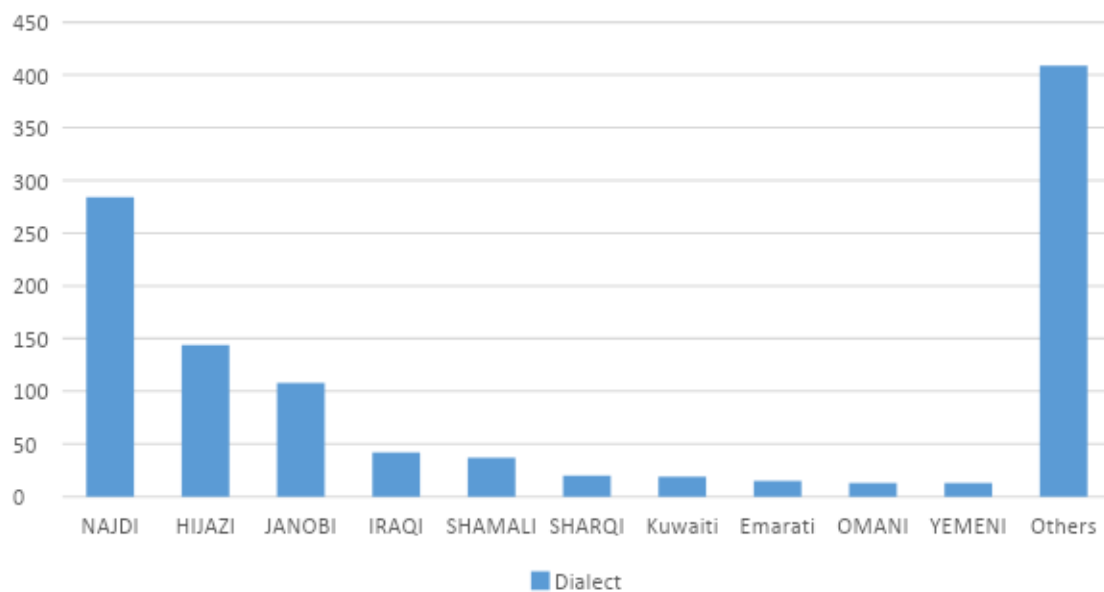
Exp3 Q6: When did you learn Modern Standard Arabic?
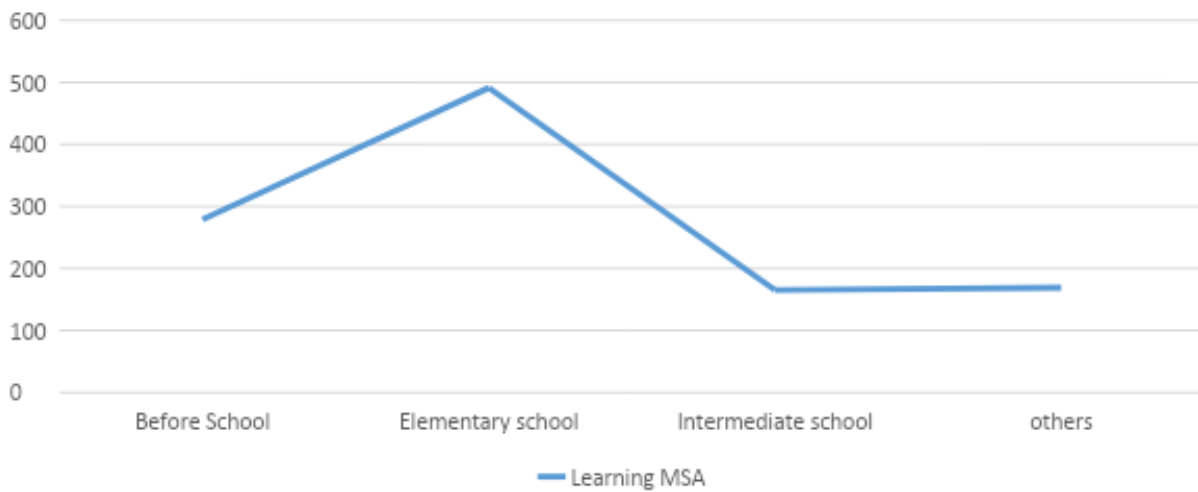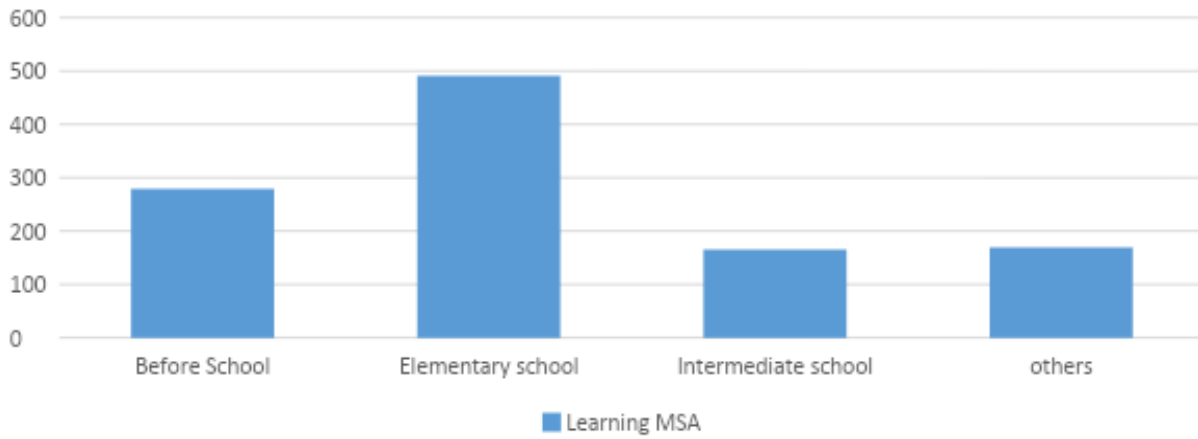
Learning MSA	Count
Before School	279
Elementary school	491
Intermediate school	165
others	169

Exp3 Q7: What was your age when you learned Modern Standard Arabic?
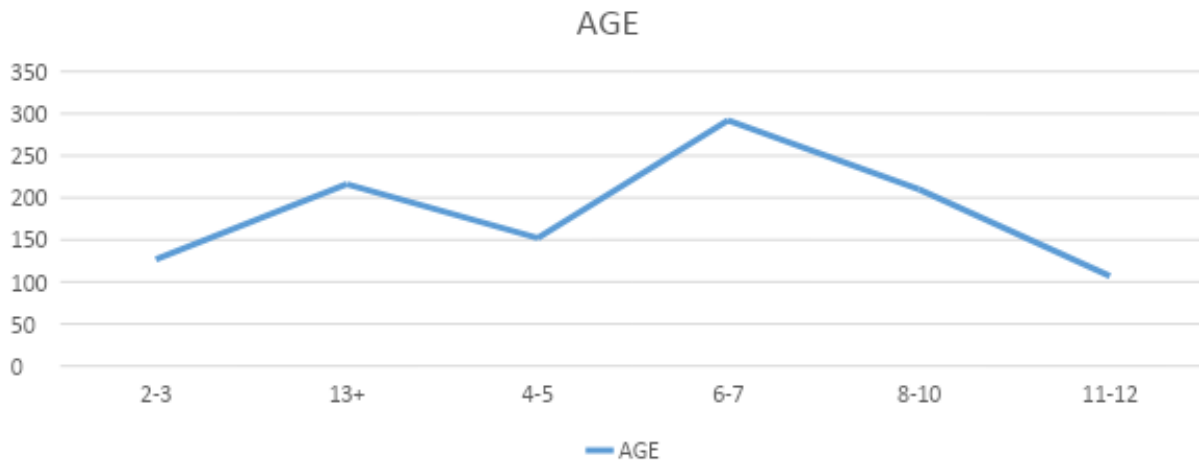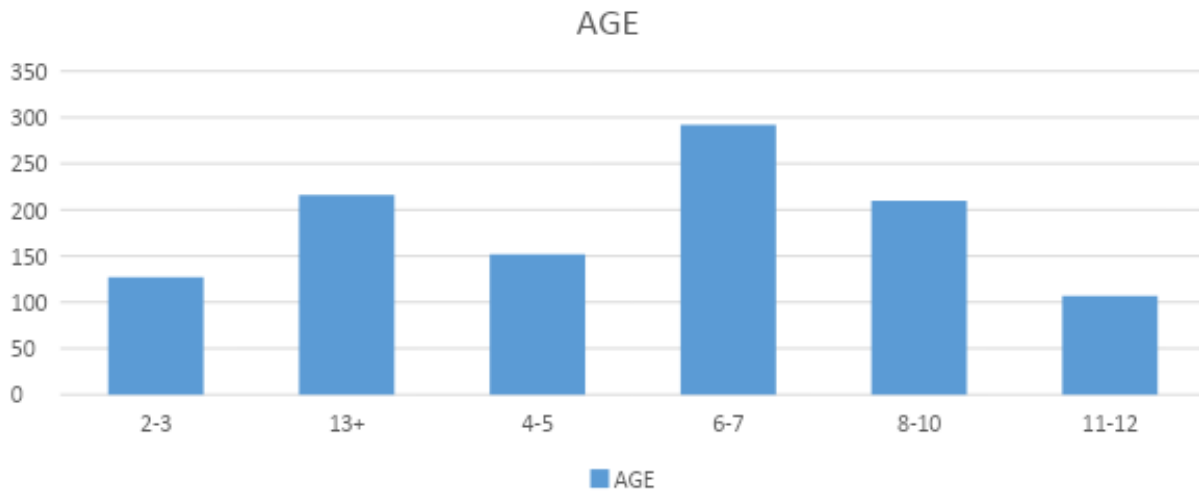
AGE	COUNT
2-3	127
4-5	152
6-7	292
8-10	210
11-12	107
13+	216

Exp3 Q8: Participants Self-evaluation of Modern Standard Arabic

SKILL	MIN	MAX	MEAN	SD	VARIANCE	RESPONSES	
READING	1.00	6.00	5.06	1.56	2.43	1104.00	5582.00
WRITING	1.00	6.00	4.73	1.60	2.56	1104.00	5220.00
LISTENING	1.00	6.00	4.54	1.60	2.57	1104.00	5007.00
SPEAKING	1.00	6.00	5.10	1.57	2.48	1104.00	5628.00

SKILL	1	2	3	4	5	6
READING	95	22	45	96	152	694
WRITING	96	36	87	169	181	535
LISTENING	90	58	121	182	208	445
SPEAKING	96	29	34	83	132	730
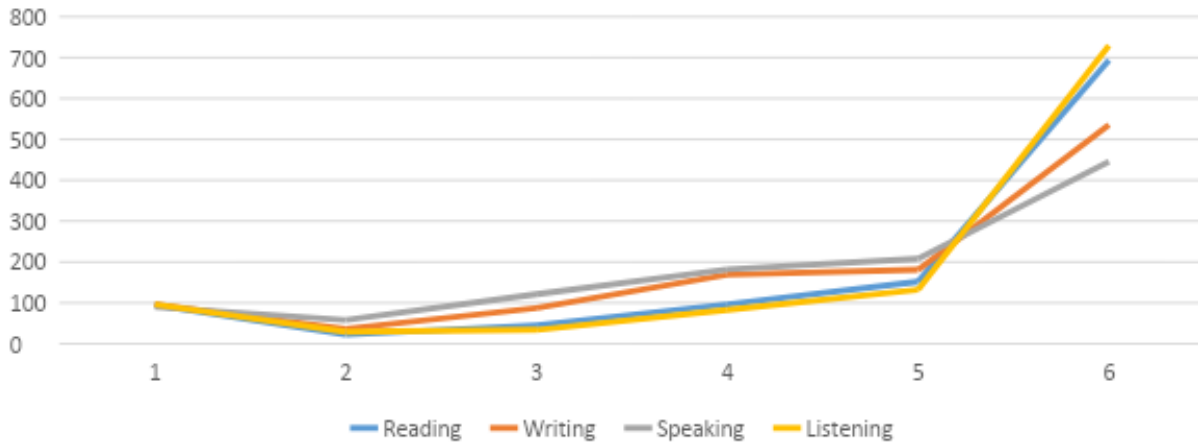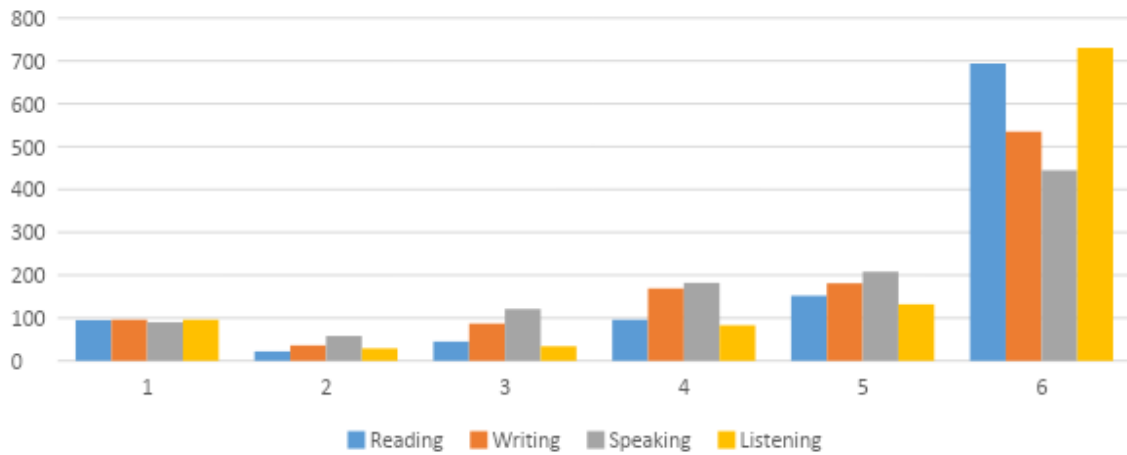
Exp3 Q9: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?
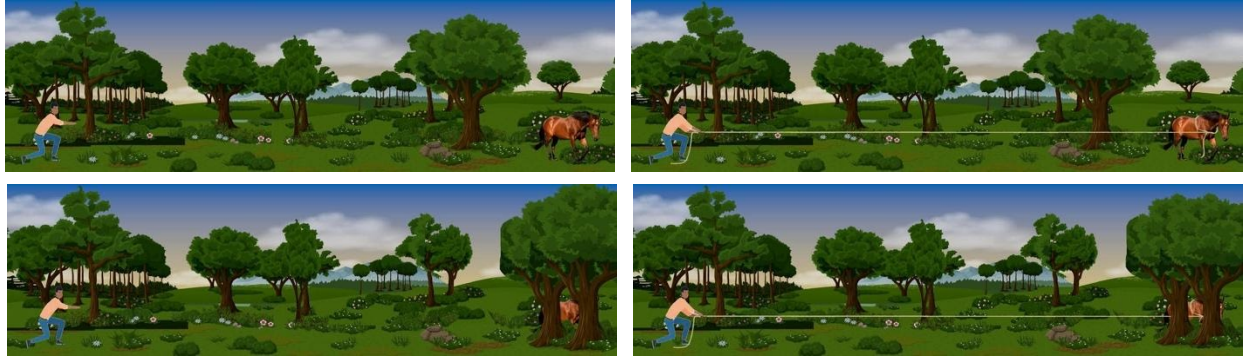

Example: 1) The flower is here.

2) The hot air balloon is ....

LOCATIVE ADVERBS	COUNT
HERE	51
THERE	353
OVER THERE	7
UP	73
OTHERS	620

Exp3 [Q10, Q11, Q12, Q13]: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?

Locative Adverb	Contact/Control	Visibility	Distance	Count
Here	Contact	visible	Distal	118
		invisible	Distal	72
	No Contact	visible	Distal	37
		invisible	Distal	27
There	Contact	visible	Distal	112
		invisible	Distal	82
	No Contact	visible	Distal	234
		invisible	Distal	164
Over There	Contact	visible	Distal	8
		invisible	Distal	8
	No Contact	visible	Distal	18
		invisible	Distal	18

Exp3 [Q14, Q15, Q16, Q17]: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?
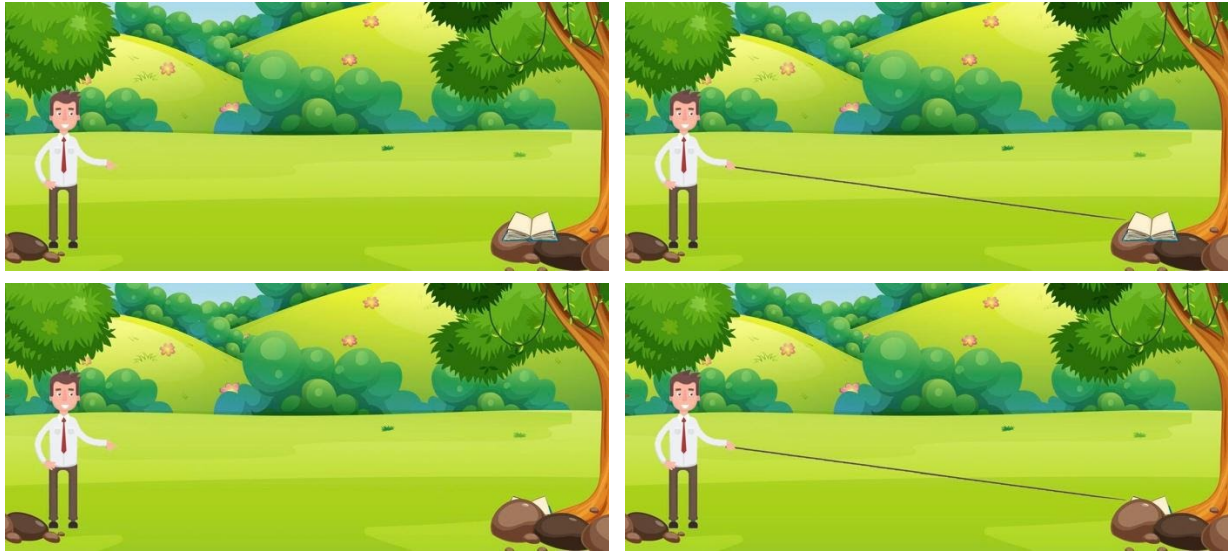
Locative Adverb	Contact/Control	Visibility	Distance	Count
Here	Contact	visible	Medial	126
		invisible	Medial	144
	No Contact	visible	Medial	50
		invisible	Medial	34
There	Contact	visible	Medial	125
		invisible	Medial	63
	No Contact	visible	Medial	238
		invisible	Medial	108
Over There	Contact	visible	Medial	8
		invisible	Medial	5
	No Contact	visible	Medial	12
		invisible	Medial	9

Exp3 [Q18, Q19, Q20, Q21]: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?
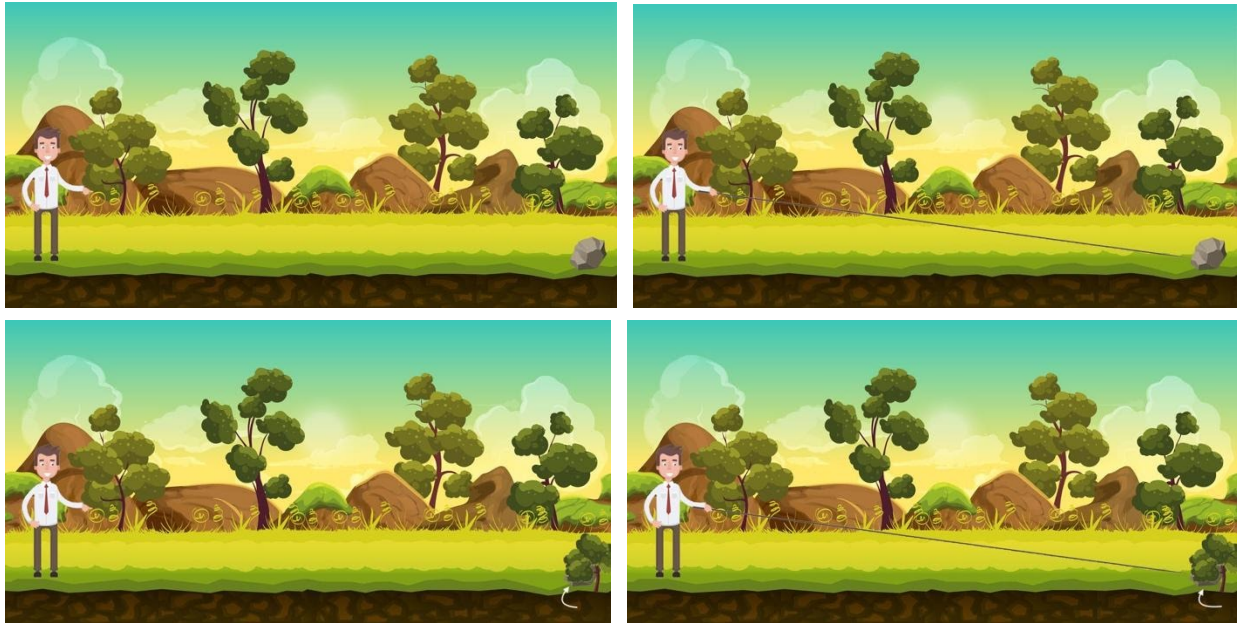

Locative Adverb	Contact/Control	Visibility	Distance	Count
Here	Contact	visible	Distal	63
		invisible	Distal	82
	No Contact	visible	Distal	16
		invisible	Distal	13
There	Contact	visible	Distal	147
		invisible	Distal	92
	No Contact	visible	Distal	181
		invisible	Distal	124
Over There	Contact	visible	Distal	12
		invisible	Distal	6
	No Contact	visible	Distal	13
		invisible	Distal	19

Exp3 [Q22, Q23, Q24, Q25]: What are the locative adverbs that are used to describe the referents below relative to the character at the bottom?

Locative Adverb	Contact/Control	Visibility	Distance	Count
Here	Contact	visible	Medial	88
		invisible	Medial	82
	No Contact	visible	Medial	53
		invisible	Medial	31
There	Contact	visible	Medial	205
		invisible	Medial	73
	No Contact	visible	Medial	205
		invisible	Medial	138
Over There	Contact	visible	Medial	13
		invisible	Medial	9
	No Contact	visible	Medial	6
		invisible	Medial	18

Exp3 Q26: Is it natural to say the following locative adverb (5 highest - 1 lowest)?

Example: The pink flower is here   5/5

Exp3 [Q27, Q28, Q29, Q30]: Is it natural to say the following locative adverb (5 most natural - 1 least natural)?

Locative Adverb	Contact/Control	Visibility	Distance	Mean	Responses	Max	Min	SD	Var
Here	Contact	visible	Distal	3.08	1104	5.00	1.00	1.64	2.70
		invisible	Distal	2.80	1104	5.00	1.00	1.64	2.70
	No Contact	visible	Distal	2.72	1104	5.00	1.00	1.62	2.63
		invisible	Distal	2.73	1104	5.00	1.00	1.65	2.72
There	Contact	visible	Distal	3.33	1104	5.00	1.00	1.63	2.64
		invisible	Distal	3.35	1104	5.00	1.00	1.61	2.59
	No Contact	visible	Distal	3.63	1104	5.00	1.00	1.58	2.48
		invisible	Distal	3.56	1104	5.00	1.00	1.57	2.48

Exp3 [Q31, Q32, Q33, Q34]: Is it natural to say the following locative adverb (5 most natural - 1 least natural)?

Locative Adverb	Contact/Control	Visibility	Distance	Mean	Responses	Max	Min	SD	Var
Here	Contact	visible	Medial	3.18	1104	5.00	1.00	1.64	2.68
		invisible	Medial	3.08	1104	5.00	1.00	1.65	2.74
	No Contact	visible	Medial	2.70	1104	5.00	1.00	1.61	2.59
		invisible	Medial	2.42	1104	5.00	1.00	1.58	2.49
There	Contact	visible	Medial	3.46	1104	5.00	1.00	1.59	2.53
		invisible	Medial	3.42	1104	5.00	1.00	1.58	2.49
	No Contact	visible	Medial	3.76	1104	5.00	1.00	1.49	2.23
		invisible	Medial	3.38	1104	5.00	1.00	1.63	2.65