The Phonaesthetics of Jordanian Names

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Declaration

I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

Signature:...

BARA'AH ALABABNEH

Dedication

To the memory of my beloved father, Abdel Majeed AlAbabneh

with love and gratefulness

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PhD in Linguistics

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Summary

Building on the previous research on first names (Cutler et al. 1990; Crystal, 1995a, Sidhu and Pexman, 2015), this study investigates the phonological patterns of male and female first names in Jordan and examines the positive phonaesthetic features of Jordanian names. It also studies the impact of sound symbolism on the phonological differences between male and female names and the adaptation of foreign names into Jordanian Arabic (JA). This study contributes to the study of JA name phonology and brings research on sound symbolism and phonaesthetics to the study of JA names.

This study analysed the phonological structure of actual Jordanian names in terms of phonological and sound symbolism features. Phonological features included the beginning and ending sounds, type of syllables, length of names and positive phonaesthetic features, i.e. aesthetically pleasant-sounding. Sound symbolism analysis included the study of the number of *bouba* and *kiki* sounds, and the sound symbolism structure of Arabic sounds in Jordanian names. A quantitative analysis was used to test the findings and to evaluate cross-linguistic and cross-dialectal perception among rural dialect and Urban dialect speakers of JA and native English speakers using pseudonames. It also tested the hypotheses that people can predict the gender of a name based on its phonology and that they prefer names that have more gender-weighted features.

Both hypotheses were supported mainly among rural dialect speakers. The findings show that, like English names, Jordanian first female names have more sonorants and vowels than male names and tend to end in open syllables and have more positive phonaesthetic features. Findings also show that sound symbolism is a possible factor in the phonological differences between male and female names. Female names show more front vowels and weak sounds and male names show more back vowels and strong sounds but no significant impact of the bouba-kiki effect. It was also found that adaptation of foreign names into JA follows the same adaptation processes as loan words.

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Introduction

‘And he taught Adam the names – all of them. Then he showed them to the angels and said, inform me of the names of these, if you are truthful.’ (The Qur’an 2: 31)

1.1 Introduction

This study investigates the phonological features of first names in Jordan and the different phonological patterns of male and female names. A multi-faceted approach is adopted, relying on previous research to study the phonology of Jordanian first names and identify the phonaesthetic and sound symbolic features in them. A large body of literature has examined names in Jordan and has mainly observed diachronic change of names, the semantics of names, and sociocultural and non-linguistic factors affecting naming practice in Jordan (Abd-el-Jawad, 1986; Salih and Bader, 1997; Zuraiq, 1999; Zawaideh, 2006; Abu Hatab, 2015). However, the phonology of names has been only briefly discussed in some of these studies. To the best of my knowledge, no previous work has covered in-depth in one study personal name phonology, sound symbolism and phonaesthetics in the Arab world in general and in Jordan in particular.

Names under study are analysed according to the following characteristics:

a. **Linguistic Features**:

1- Name beginning and ending sounds.
2- Type of consonants, vowels and syllables.
3- Length of names.
4- Positive phonaesthetic structure.

b. Sound Symbolism in First Names:

1- The number of *bouba* consonants and vowels.
2- The number of *kiki* consonants and vowels.
3- Sound symbolism structure of Arabic sounds in Jordanian first names.

This chapter starts with an overview of the linguistic environment of Arabic Language in Jordan and the geographic area this study covers. This chapter then describes the scope and theoretical assumption of the study and ends with the dissertation outline.

1.2 The Linguistic Environment of Arabic language in Jordan

Jordan is an Arab country that is located geographically in Southwest Asia with Syria to the north, Iraq to the northeast, Saudi Arabia to the east and south and Palestine to the west. The country is named after the Jordan River, which passes on its Western border. According to the census statistics in Jordan 2020, the population of Jordan is 10,806,000. 95-97% of Jordanians are ethnic Arabs. The remaining come from other ethnic minorities, such as Circassians, Chechens and Armenians. According to the world population review, 'there are about 500,000 Iraqis, and over 500,000 Syrian refugees have moved to Jordan to escape violence in the last few years. Assyrian Christians make up 0.8% of the population, most of whom are Eastern Aramaic speaking refugees. There are also 30,000 Kurds, most of which are refugees from Turkey, Iran and Iraq, and about 5,000 Armenians'.[1]

By the Jordanian constitution, Arabic is the official language of the country. However, Modern Standard Arabic (henceforth MSA) is only used in education, writing, religious ceremonies and news broadcasting. Different dialects of Arabic, on the other hand, are used for everyday conversations in Jordan. In his study of the Arabic dialects of Jordan, Cleveland (1963) classified the variation in the Jordanian spoken Arabic. He stated that the dialects of Jordan should be categorised in 'no less than three groupings, and more satisfactorily in four' (Cleveland 1963, p.56). He explained that having this number of groupings in a small country like Jordan can be surprising. Still, a logical explanation can be because 'these linguistic groupings correspond, though not precisely, to social and economic stratification in the country, as well to the geographical zone'. Cleveland classified the dialects of Jordan, including in his classification both banks of the Jordan River, into four types according to the way the expression 'he says' is expressed in those dialects. The first dialect in which 'he says' is expressed as *yiguul* is spoken by Bedouin people, the second is *biguul* dialect that is spoken by sedentary Trans Jordanian people, south of the West Bank and Jordan river, *bikuul*, that is the rural dialects around Jerusalem and in the central and northern part of the West Bank. The last type is called *biʔuul* dialect and refers to Urban varieties.

[1] https://worldpopulationreview.com/countries/jordan-population

More recent research sheds light on the dialects of the eastern bank of the Jordan River. Relying on previous research (Suleiman 1985; Al-Sughayer, 1990; AbuAbbas 2001; Al-Tamimi 2001; Abu Ain 2016), the country is divided into three basic regions: the capital, the south and the north. The local dialects in Jordan can be classified into rural Jordanian Arabic, Urban Jordanian Arabic and Bedouin Jordanian Arabic. Each of these dialects is further divided into many sub-dialects. The Bedouin dialect is spoken by the Bedouins in the eastern and southern parts of Jordan. The Urban dialect is spoken by the city-dwellers. The rural dialect is spoken by farmers who live in the countryside and lead an agricultural life in northern Jordan. Al-Sughayer (1990) explained that this dialect shares a lot of similarity with the 'hawran' dialect, which is spoken in southern Syria and can be considered an extension of it.

It is also worth mentioning that other dialects are also spoken in Jordan, such as Palestinian, Iraqi, Syrian, and Egyptian Arabic. Besides Arabic, other languages are spoken in Jordan by several ethnic minorities who migrated to Jordan a long time ago. Those languages include Circassian, Armenian, Chechen, Kurdish, Turkish and Domari (Gypsies). Abu Ain (2016) explained that all ethnic groups in Jordan speak Arabic in addition to their own languages. Moreover, English is taught as a foreign language at school, and it is now the official language of majority education at universities, especially for medical and scientific subjects.

The data presented in this study will be analysed primarily focusing on the rural dialect (see Chapter 4). The term 'Jordanian Arabic' (henceforth JA) will be loosely used to refer to this particular dialect unless stated in the context that it referred to other dialects. This dialect has been chosen as it is the dialect the researcher is most familiar with as it is her native dialect.

Geographically, the rural dialect is the dialect of dwellers of villages of northern Jordan, particularly Irbid and Ajloun. In this project, the suburbs of Irbid are the primary data source for this study.

Irbid governorate is situated in the northern sector of Jordan, approximately 80 kilometres from Amman (the capital city of Jordan). The city of Irbid is located near the southern borders of Syria and is known as the second-largest city in Jordan after the capital city Amman. Irbid governorate has a population of 2003800; [2] the city itself is inhabited by Jordanians who are originally a mixture of indigenous Jordanians and Palestinian immigrants. The spoken dialect in the city itself is the Urban dialect. Surrounding the city, there are nine major suburbs, as shown in figure 1.1, which include several small towns.

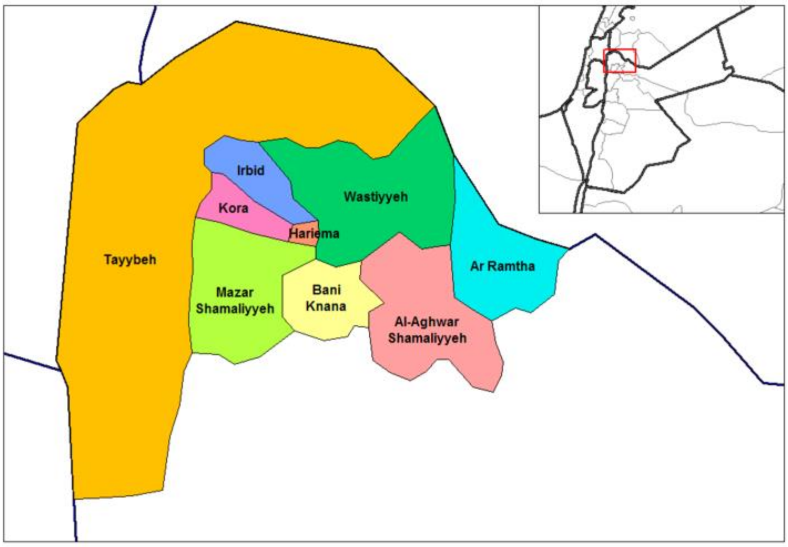

Figure 1.1: a map of Irbid city and suburbs, Jordan. (Rarelibra, 2006)

Overall, the previous section explained the dialects and languages spoken in Jordan to set an introductory ground for this research. Although minorities speak several languages in Jordan, Arabic is the dominant one, and this research mainly studies first names in Jordanian Arabic.

[2] At end of the year 2020; Department of Population and Social Statistics.

1.3 The Scope and Theoretical Assumption of the Study

1.3.1 Theoretical Approach

Nicolaisen (1985, p. 109) explained that 'although there are plenty of 'theories about names', there is still no 'Theory of Names'.' Algeo (2010) suggested that a theory of names should consider the distinctions between language system and language in use (as in the Chomskyan distinction between performance and competence and Saussurian parole/langue distinction) as they apply to names. Most of the available theories of onomastics are philosophical accounts for the function of proper nouns within sentences (Mill, 1843; Frege, 1872; Russell, 1918).

The rich literature of onomastics shows the interest in studying names in the field of Sociolinguistics (Bannister, 1997; Kalkanova, 1999; Abd-el-Jawad, 1986), Morphology (Muchnik, 2017; Zumer, 2009) and Semantics (Khoa, 2010). Previous research of names in different linguistic fields is presented in Chapter 2.

However, the study of the phonological structure of names has more recently attracted scholars' interest (Slater and Feinman 1985; Cutler et al. 1990; Barry and Harper 1995; Cassidy et al. 1999).

Moreover, there appears to be little research and no firm theories on how to study the phonology of personal names. Previous research on first names in the field of phonology has studied gender differences, name preferences and phonaesthetics of names in different languages. For the purpose of this study, a multi-faceted approach is adopted, relying on previous research (Slater& Feinman, 1985; Cutler et al., 1990; Klink, 2000; Zawaideh, 2006; Fredrickson, 2007; Mueller and Stumme, 2016).

The approach employed in this thesis focuses on the phonological aspects of personal names in Jordanian Arabic. This includes the phonaesthetics of Jordanian personal names, the phonological patterns in male and female names, the phonological adaptation of English names into JA and sound symbolism effect on first names. The concepts and approaches are adapted from Western and Arabic tradition in a way that is relevant to aim of this study. This is explained in Chapter 2.

Phonaesthetics of names in this study are examined based on David Crystal's work and definition of phonaesthetics (1995a).[3] According to Crystal (1995a, p. 8) the term phonaesthetics refers to 'the expressive properties of sound' and the study of phonaesthetics investigates why people consider some words more beautiful in terms of sounds rather than meaning. It is worth noting that some of the phonaesthetically positive, i.e. aesthetically pleasant, criteria outlined by Crystal (1995a) are universal, while others are language-specific. The criteria used in this research are explained in more detail in Chapter 2.

The approach employed to study the impact of sound symbolism on names in this research has been adapted from both Western and Arabic traditions. Sound symbolism refers to the direct association between the form and the meaning of language. Previous research on size-related sound symbolism has shown that, for example, smaller objects tend to be associated with front and high vowels. In comparison, larger objects tend to be associated with back and low vowels. Another sound-symbolic relation between the phonetic features of the sound and the physical characteristics of the object is the bouba-kiki effect. The bouba-kiki literature demonstrates that visual shapes (rounded or angular) are linked with lip movements when uttering the vowel /u/ or /i/. Notions from both traditions were reviewed in a way that is relevant to this study. This is discussed in detail in Chapter 3.

This study examines the front/back vowel association with smallness (femaleness)/ largeness (maleness) in Jordanian names to test the universality of this distinction. It also investigates the association of Arabic linguists' distinction of strong/weak sounds with maleness and femaleness. The universality of bouba-kiki impact is also tested by studying the frequency of bouba and kiki sounds in Jordanian names.

Previous research has studied the influence of sound symbolism and phonaesthetics on given names (Cutler et al. 1990; Whissell, 2001; Sidhu & Pexman, 2015; Allerton, 1987 and Smith, 1998). See Chapter 2 for more detailed discussion.

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[3] The term phonaesthetics in this study refers to expressive properties of sounds, which is different from discredited notion that Phonaesthetics is the 'hypothesis that languages are *objectively* more or less beautiful or pleasant depending on various parameters, such as vowel to consonant ratio, presence or absence of certain sounds etc' (Battilani, 2018).

Although extensive research has tested the influence of sound symbolism and phonaesthetics on names cross-linguistically, little research tested this impact on Arabic names in general and Jordanian names in particular. This study investigates the phonological aspects of naming in JA and addresses questions about the universality of sound symbolism/phonaesthetic impact.

1.3.2 Research Aims and Questions

The main purpose of this study is to investigate the phonological patterns in male and female names in JA, study the impact of sound symbolism on the phonological differences between male and female names, and explore the phonaesthetic patterns of first names in Jordan.

No previous research, to the best of the researcher's knowledge, has studied personal name phonology, the impact of sound symbolism and phonaesthetics of names in the Arab world in general and in Jordan in particular. This research, thus, has the following theoretical aims:

1- To contribute to the study of name phonology as this is considered under-researched compared to other linguistic fields.
2- Specifically, to add to the study of Arabic and JA names.
3- To bring research on sound symbolism and phonaesthetics to the study of Arabic names in general and Jordanian names in particular and test the universality of sound symbolism impact on JA names.
4- To enrich the field of the phonology of names by studying the phonological adaptation of foreign names into JA and test if these names follow a similar adaptation of other loan words.

The present study aims at answering the following questions:

1- What are the phonaesthetic patterns in Jordanian names?
2- Are phonological patterns in male names different from those in female names?
3- Is there any impact of sound symbolism on the phonological differences between Jordanian male and female names

1.3.3 Overview of Methodology

This section provides an overview of the study's methodological framework. To answer the research questions, two studies are conducted on the phonological and phonaesthetic features of Jordanian names. The first study thoroughly investigates the phonological structure of actual JA names and tests the findings in a cross-linguistic and cross-dialectal perception study. The second study analyses the adaptation of foreign names into JA.

To conduct the first study, data collection and analysis followed several stages. The top 100 female first names and top 100 male first names are collected from the civil service bureau for the most frequent and popular names in Jordan for the year 2017. Names have been transcribed using the IPA symbols according to JA, particularly the rural dialect sound system. The names were then analysed according to the following features

a) **Linguistic features**:

   1- Name beginning and ending sounds
   2- Types of Type of consonants, vowels and syllables
   3- Length of names
   4- Positive phonaesthetic features

b) **Sound symbolism impact on first names**

   1- The number of *bouba* consonants and vowels.
   2- The number of *kiki* consonants and vowels.
   3- Sound symbolism structure of Arabic sounds in Jordanian first names.

More detailed information about the data collection and analysis of this study is presented in Chapter 4.

As a second step towards making a general hypothesis about the sound patterns of male and female names in Jordan, and to test findings in a cross-linguistic perception study, a list of pseudonames was created relying on the findings of the analysis. An online questionnaire was used, and a sample of Jordanian Arabic and English native speakers took part. A quantitative analysis was used to test the findings and to evaluate the cross-linguistic perception, and test two hypotheses:

1- The gendered categorisation of pseudonames can be predicted based on their phonology.
2- Names that have more male-associated or female-associated features are evaluated more positively.

More detailed information about data collection and analysis is presented in Chapters 6 and 7.

The second study analyses the phonological adaptation of foreign names used in Jordan to establish whether sound symbolism plays a role in the choice and adaptation of foreign names and whether the choice of foreign names follows the phonological patterns of the JA names.

A list of foreign names was collected anecdotally by asking JA speakers about some of the foreign names they have heard recently. Pronunciations of these names by a sample of Jordanian Arabic and English native speakers were recorded. The data analysis framework was adopted from previous research on loanwords by Salem (2015) and Abu Guba (2016). More details of the study are presented in Chapter 5.

Findings of this study show that, like English names, Jordanian first female names have more sonorants and vowels than male names and tend to end in open syllables. Unlike English names, female names are shorter than male names.

Phonaesthetically speaking, it was found both male and female names tend to have positive phonaesthetic features and avoid negative features. However, female names tend to have more positive phonaesthetic features, as they tend to be shorter, tend to have more vowels and tend to end in vowels. Female names also have fewer of the dispreferred sounds compared to male names. This study also revealed that sound symbolism is a possible factor in the phonological differences between male and female names with female names showing more front vowels and weak sounds and male names showing more back vowels and strong sounds. This supports the previous literature on the universality of sound symbolism. However, no significant impact of bouba-kiki effect was observed.

The analysis of the phonological adaptation of foreign names into JA shows that names undergo two main processes: segmental and suprasegmental adaptation, and follows the same process of loanwords adaptation. It also shows that there is no evidence that adaptations of foreign names are influenced by sound symbolic or phonaesthetic choices.

1.4 Outline of The Study

The chapters of this study are presented as follows: the first two chapters introduce the background, research questions, literature review, and theoretical framework for this study. Chapter 3 provides a brief description of the phonology of MSA, the phonology of JA followed by a distinction between the phonology of JA and MSA. The methodologies used for data collection and analysis in research number 1 to analyse the phonological patterns in male and female names in JA are presented in Chapter 4. Chapter 4 also investigates the positive phonaesthetic features of Jordanian names and the impact of sound symbolism on the phonological differences between male and female names. Moreover, Chapter 5 explains the procedures adopted for data collection and data analysis in study 2 to analyse the phonological adaptation of foreign names into JA. The perception of the phonology of names by Jordanian Arabic speakers is examined in Chapter 6, and the two research hypotheses are tested in this chapter as well.

Furthermore, Chapter 7 investigates the cross-linguistic perception of Jordanian first names and answer one of the research questions whether there are similar associations between Arabic and English speakers regarding sound patterns in names or not.
Finally, Chapter 8 provides conclusions and suggestions for future studies.

Chapter 2
Literature Review

2.1 Introduction

In this chapter, I review studies on the topics this thesis examines. This chapter includes three main sections: phonology and sound patterns of names, sound symbolism in names and finally, phonaesthetics.

This chapter begins with an overview of the definitions and categories of names and explains the elements of personal names and naming practice in Arabic. It then reviews the linguistic study of names. It then presents the previous research of sound patterns and phonological gender differences in names in English. This chapter then introduces the previous research on sound patterns of first names in Jordan. The second section of this chapter provides an overview of the study of sound symbolism. It starts with the definitions and the explanation of the different types of sound symbolism, followed by reviewing the study of sound symbolism cross-linguistically and sound symbolism in brand names. It then presents the definition and the previous research on the bouba-kiki effect. Finally, it reviews the study of sound symbolism in Arabic and the meaning of the Arabic sounds. I use the previous findings to classify the Arabic sounds into their symbolic meaning to create an essential reference for analysing names in Chapter 4.

The third section of this chapter starts with the definition of phonaesthetics and the origin of the term. Then it reviews some literature on the phonaesthetics of names and reviews the study of phonaesthetics in the Arabic language and Arabic names. The last part examines the study of phonaesthetics in Jordanian names and creates the essential reference for analysis of names in Chapter 4.

2.2 Names: an Overview

A name is a broad concept used to identify or refer to an individual entity. People use names to recognise each other as well as elements around them. Coates (2006a, p. 312) explained that name is ‘a technical term for a subset of the nominal expressions of a language which are used for referring (identifying or selecting in context) and, in some cases, for addressing a partner in communication.’

Naming is an essential practice all around the world. It is the way people use to identify the surroundings, give meaning to things, and communicate between them. Hawana (1977, p. 2) defined names as 'labels of differentiation and identification. One always starts, when introducing himself, by stating his name. The family name, where it exists, might give a good indication of locations, trades, and occupations.' A name may often be a clue to the nationality, religion, or race of its bearer. Linguistically speaking, Zumer (2009) explained, 'naming is a specific linguistic act, intimately linked with values, traditions, hopes, fears and events in people's lives'. Names can also give clues to their bearers or their givers' preferences and beliefs.

The discipline that studies proper names is called *onomastics*. *Onomastics* is defined by The International Council of Onomastic Sciences (ICOS) as the study of proper names, from the Greek word *onoma*, `name'. Blackburn (2008) defined onomastics as the branch of semantics, which mainly explores the etymology of proper names. He explained that onomastics is classified into two main categories: *anthroponomastics*, which is the study of personal names and *toponomastics*, which is the study of place names.

The International Council of Onomastic Sciences (ICOS) provided definitions of different categories of proper names based on the nature of the referent, some of them are shown in Table 2.1.

Table 2.1: Categories of proper names

Category	**Definition**
Anthroponyms	name of a human being
Toponyms	name of a place, sometimes in a broad sense, sometimes used in a restricted sense of inhabited places
Ethnonyms	name of a people or tribe
Ergonyms	sometimes used for the name of an institution or commercial firm
Charactonym	sometimes used for name of a (literary) character
Zoonym	name of an animal

Bright (2003) stated that onomastics had been studied under the umbrella of some fields like linguistics, ethnography, philology and history. Aleksiejuk (2015) considered *anthroponyms* the most diversified *onomastic* subdivision, making their standardisation a problematic task.

Various research in different fields has studied proper names, such as 'sociolinguistics (name-giving and the use of names in society), psycholinguistics (psycho-onomastics and the physiognomy of names), pragma linguistics and text linguistics' Khoa (2010, p. 11). Previous research has also investigated given names (Slater & Feinman 1985; Barry & Harper 1995), surnames (David, 2001), *toponyms* (Cameron, 1996) and nicknames (Klerk and Bosch, 1997). The study of given names, or what is known as personal names, is the main interest of this study.

2.2.1 Elements of Personal Names and Naming Practice

Personal names, which are the main interest of this study, are universal, but naming systems vary across cultures. Khoa (2010, p. 32) explained that 'universally, a full name may consist of three basic elements: given name, middle name and family name whose function and importance of each element differ from culture to culture.' I will first discuss English naming practices and then discuss some variations in other cultures.

The given name is the name that is given to the newly-born baby to distinguish them from others. In English, *first name*, *given name*, *Christian name*, and *forename* can also refer to the same element. Blount (2015) illustrated that, in English-speaking communities, the source of the majority of given names is the Bible, such as *Hannah*, *Sarah*, *Jacob* and *Joseph*. Other sources of given names are classical names, surnames, place names and Celtic names.

According to Coates (1999), there are different sources of English personal names such as:

1- Names from Old Testament such as *Abraham* and *Aaron*.
2- Latin and Greek names such as *Alethea* and *Caesar*. 'The afflux of Greek, Latin and Italian names provided the source of the modern-day typical female name in -a. Some classical doublets for established names came into vogue, e.g. Lucia for Luce, Lucy. This set a pattern which continues to the present day, for we find such pairs as *Anne/Anna*, *Helen/Helena*' (Coates, 1999, p. 340).
3- Names used in literature such as Shakespeare's *Juliet* and Swift's *Vanessa*.
4- Names preferred by the German royals that started to be popular with the arrival of the house of Hanover on the throne of England such as *George*, *Caroline*, *Charlotte*. Although not all of these names were of Germanic origin, the German connection explains their popularity, particularly among the higher classes.

The second element is the middle name, or what is known as the second first name. It is the name that is added between the first name and the family name. Blount (2015) pointed out that middle names may be chosen from maternal lines or for aesthetic purposes to produce a name-set that avoids disharmony in the entire name structure or any difficulty. He explained that 'Three multisyllabic names in a row, for example, are less common than other patterns. Single-syllable middle names, in particular, may be chosen to help with the 'flow' of the names, i.e. essentially for aesthetic or euphonic reasons' (2015, p. 612).

The importance of the middle name differs among societies; Khoa (2010) explained that the Vietnamese and German consider the middle name an essential part of the personal name structure, unlike the English, who may abbreviate or even omit the middle name.

The third element in the personal name structure is the family name, also called the last or surname. This element is inherited and considered more formal than the other two and assigns a child to a recognized kinship unit. Blount (2015) explained that most surnames in English were created from one of four sources:

1- Patronymic surnames, which consist of the father's first name plus a suffix or prefix to denote surname status. For example, the form of the suffix -*son* plus the father's name as in *Johnson, Watson*. Another suffix is the -*s* suffix, as in Richards or Collins.
2- Person's occupation such as *Smith* (blacksmith) and *Chapman* (shopkeeper).
3- Topographical, derived from the place or type of location where a person lived such as *Matthew* who lived by the river would become *Matthew River*, *Anna* who lived on a hill would become *Anna Hill*.
4- Descriptions of behavioural or physical traits are used to describe people such as *White*, *Long*, and *Wise*.

There are several cultural variations in the form of the surname. In some societies, e.g. Chinese and Korean, the family name is placed before the given name. The order of personal name structure is family name+ middle name+ personal name. Another variation is found in Spanish-speaking countries, where double surnames can be given. A Spanish surname usually includes the father and mother's family name, the name standing before is considered more important.

2.3 Naming Practice in Arabic

In Arabic language, the word for name is *ism*, which is derived from the root *wasm*, which means an identifying sign. Abu Hatab (2015) explained that a reference is made to naming in the holy Qur'an, as shown in the following verse.
'We give you the glad tidings of a son whose name will be *Yahya* we have given that name to no one before him.' (The Qur'an, 19:7)

Regarding the name structure, any Arabic name starts with a given name, followed by the father's name, followed by the grandfather's name etc. It can be as long or short as needed. Traditional Arabic names consist of five parts: The *ism, kunya, nasab, laqab*, and *nisba*, which refer to the personal name, the agnomen, the lineage, the nickname and the lineation, respectively (Rosenhouse, 2002).

Notzon and Nesom (2005) asserted that the *ism* is the given name. It is the name given to children at birth, like *Ahmad* for a boy or *Maha* for a girl. The *kunya* is an honorific name and is not considered part of a person's formal name. *Kunya* indicates that the man or woman has become the parents of children. For example, *Umm* or *Oum Ahmad* means 'mother of Ahmad', and *Abu Ahmad* means 'father of Ahmad'. The Kunya is used to refer to the first-born boy. If the first child is a girl, the *kunya* would be changed later to show the birth of a boy. The *nasab,* which is only used rarely in some Arab countries, starts with *bin* or *ibn* 'son of', or *bint*, which means 'daughter of'. The *laqab,* on the other hand, is the title. It is not an official or social title; it is a personal title, usually a religious or descriptive one. For example, *Al-Rashid* means 'the rightly guided'. Notzon and Nesom (2005) added that the *laqab* also follows the *ism*. For example, *Khalid al-Rashid ibn Abdul Aziz* translated as 'Khalid, the rightly guided son of Abdul Aziz'. *Nisba* can be translated to the family name. It may refer to a profession, a geographic location, or a tribe, for example, *Al-Attar*, 'the spice vendor', *Al-Baghdadi,* 'the people of Baghdad', Al-*Rashidi* 'tribe'. The *ism* that is the given or personal name is the part this study is interested in.

Arabs tend to choose names for their children pertaining to religion, objects, animals, plants, planets, times, descriptive connotations, and abstract concepts. As for the religious impact of choosing a name, some personal names can be attributed to Muslims or Christians, while others can be simply used by either group. A name that expresses enslavement to and worship of Allah as *Abd al-Rahman* /ʕabdulɾaħmaan/ 'servant of the most merciful' is traditionally an Arabic name for a Muslim male, while *Butros* /butɾus/ 'stone' is attributed to a Christian male. On the other hand, a name like *Saeed* /saʕiid/ 'the happy' is common for followers of both religions. Names of objects are also common in Arabic names such as *Husam* /ħusaam/ 'a sword', animal names especially those known for strength such as *Nemer* /nimiɾ/ 'tiger', *Theeb* /ðiib/ 'wolf', and *Fahed* /fahid/ 'leopard'. Names of birds that Arabs, in the past, used to hunt for food such as *Saqer* /sˤaqiɾ/ 'falcon' and *Naser* /nasiɾ/ 'eagle' are also used as males' first names even nowadays.

Descriptive names such as *Jameel* /ʤamiil/ ‘beautiful’, *Khaled* /xaalid/ ‘eternal’ and *Adel* /ʕaadil/ ‘fair or just’, plants names such as *Zahrah* /zahɾah/ ‘flower’, *Wardah* /waɾdah/ ‘rose’ along with planets names such as *Shams* /ʃams/ ‘the sun’ and *Qamar* /qamaɾ/ ‘the moon’ are also considered common Arab first names. Abstract concepts in first names are also very popular. Names that signify ideas such as *Kamal* /kamaal/ ‘perfection’, *Jamal* /ʤamaal/ ‘beauty’, and *Ehsan* /ʔiħsaan/ ‘charity’ can be found frequently among Arabs. Names of seasons, Arabic Months, days of the week, special occasions and even parts of the day are also common names in Arabic speaking communities. Examples of such names are *Rabee* /ɾabeeʕ/ ‘spring’, *Ramadan* /ɾamadaan/, *Khamees* /xamiis/ ‘Thursday’, *Eid* /ʕiid/ ‘Muslim festival’, *Duha* /dˤuħaa/ ‘forenoon’ respectively, (Al-Hatti, 2003).

In the past, Arabs tended to choose names that reflect strength, such as *Asad* /ʔasad/ ‘lion’ and *Aws* /ʔaws/ ‘one of the wolf names for Arabs in the past’ for their sons. On the other hand, they used to name their servants with names that indicate easiness as *Yusr* /jusɾ/ ‘ease’ and *Yumn* /jumn/ ‘luxury, blessing’.[4] When asked about the reason behind this, Ibn El-Kalbi justified that by stating that ‘Arabs name their sons for their enemies and their servants for themselves’ (Al-Tha'labi1989, p. 273).

FBIIC (2006) specifies that Arabic first names (personal names) can be simple like *Ahmad* or compound. Compound nouns should not be separated. Among the compound nouns, the guide to naming practice lists the following:

a. Names beginning with *Abd* /ʕabd /, *Abdul* /ʕabdul/ ‘servant/servant of’ combined with one of the names of Allah (‘God’): e.g. *Abdullah* /ʕabdullah/, *AbdulRahman* /ʕabdʔilɾaħmaan/.

b. Names ending in al-din which means of the religion /ʔaddiin/, /el-din /, /ʔildiin/, /ʔiddiin / e.g. *Noor-al-din* / nuuɾʔiddiin/

c. Names ending in -Allah ‘God’: e.g. *Habiballah* /ħabiibʔallah/.

[4] Meaning of names are taken from books of names meanings , websites dedicated for names meanings and some are translated by the researcher to their closest English meaning.

Muslim parents, particularly, feel compelled to choose a good name for their children. Prophet Muhammad, peace and blessings be upon him, said: 'you will be called by your names, and the names of our fathers; so give good names to your children.[5] In Islam, some names are preferable to others. These names can be classified into four categories of good or preferred names. The first (best) category includes the names *Abd-Allah* and *Abd al-Rahmaan*. Prophet Muhammad, peace and blessings be upon him, said, 'the most beloved names to Allah the Exalted are *Abdullah* 'the servant of Allah', and *Abdur Rahmaan* 'the servant of the Merciful'.'[6]

The second category is all the names that express enslavement to Allah, such as *Abd al-Azeez*, *Abd al-Raheem*, *Abd al-Malik*, *Abd Allah*, *Abd al-Salaam*, etc. The third category is the names of prophets and messengers. The first preferred name in this category is the name of Prophet Muhammad and the name *Ahmad* that is considered one of his names. Then comes names of 'Messengers of strong will', namely *Ibrahim, Mussa, Issa* and *Nuh*, then the rest of the Prophets.[7] The fourth category is the names of the companions of Prophet Mohammad. The fifth category includes any name that carries a good and pleasant meaning.

It is also worth mentioning that there are also dispreferred names in Islam, which have unacceptable religious, linguistic or social connotations. It was reported that Prophet Mohammed hated the name /ħaɾb/, which means 'war' and changed the name of /ʕaasˤijah/, which means 'one who does not obey Allah', into /ʤamiilah/ which means 'beautiful'. Some names are considered forbidden. Those are the names that are not allowed for having connotations that contradict Islam, such as /xaaliq/ 'creator', /malikʔalmuluuk/ 'king of kings' or /ʕabdʃams/ 'slave of the sun' (Abu Zaid, 1995).

The names of Christian Arabs, on the other hand, can be derived from the Bible or names of saints, like *Butros*, *Youhanna* and *Jerjis*, which are the Arabic versions of *Peter*, *John*, and *George*, respectively.

[5] In Al-Nawawi (2004)
[6] In Abu Dawoud (2009)

[7] Quran, Al-Ahqaaf [46:35].

In Jordan, there is also a sizable Christian Arab population. Despite the religious differences, they are Arabs linguistically and ethnically, and they follow Arabic values. Salih and Bader (1999) explained that most Jordanian Christian names are derived from Arabic culture. They added that some other names 'Arabicized Christian names (i.e. names from Biblical source or names of Christian, both Middle Eastern and European, saints and religious figures), names borrowed from English, French, or other European languages, and even names denoting Islamic history and culture' (Salih and Bader, 1999, p. 31). They also found that Arab Christians tend to name their children after prophets and even Islamic figures relating to their Arabic identity. On the other hand, purely Christian names are used by other Christian groups in Jordan (including Armenian and Greek Orthodox) who chose names to demonstrate their loyalty and membership in their churches.

Regarding linguistic features of Arabic names, Omer (2005) analysed some linguistic features in the field of morphology, syntax and semantics as in Table 2.2:

Table 2.2: Linguistic features of Arabic names		
Field	**Feature**	**Example**
Morphology	Singular noun	*Fahad* /fahad/ ‘leopard’.
	Plural noun	*Ahlam* /ʔaħlam/ ‘dreams’
	Verbal noun	*Ibtisam* /ʔibtisaam/ ‘smiling’
	Adjective	*Hasan* /ħasan/ ‘beautiful /charming’
	Noun+female suffix	*Khalifah* /xaliifah/ ‘caliphate’
	Active verbs	*Yahya* /jaħjaa/ ‘to live’
	Passive verbs	*Muhammad* /muħammad/ (be praised)
Syntax	One word	*Ali* /ʔalii/ ‘most high’
	Two words	*Fadl-Allah* /fadlʔallah/ ‘unmerited favour of God’.
	Nexus	*Abd Al-Kariim* /ʕabdʔalkaɾiim/ ‘Servant of the generous’.
	Noun+attribute	*Al-montasir bi Allah* /ʔlmuntasiɾbillah/ ‘gained victory with the assistance of God’.
Semantics	Theophoric	*AbdulRahman* /ʕabdulɾaħmaan/ (servant of the most merciful).
	Plants	*Yasmin* /jasmiin/ ‘jasmine’
	Animals	*Saqer* /sˤaqiɾ/ ‘falcon’
	Natural phenomena	*Ra’d* /ɾaʕd/ ‘thunder’
	Features	*Jamiil* /ʤamiil/ ‘beautiful’
	Abstract features	*Jamal* /ʤamaal/ ‘beauty’
	Nationalistic	*Kifah* /kifaah/ *‘struggle’*

2.4 Gender Indication in the Arabic Language

Grammatical gender exists in many languages while it is absent in others. In Arabic, all nouns, animate and inanimate, are classified as either masculine or feminine.

Masculine and feminine nouns are divided into two subcategories: sex-based and non-sex-based forms (Corbett, 2013). The first sub category of masculine forms is the sex-based nouns; these are the nouns that refer to human or animal males such as *rajul* /ɾadʒul/ 'man', *walad* /walad/ 'boy', *Ahmad* /ʔaħmad/, *asad* /ʔasad/ 'Lion' and *tabeeb* /tˤabiib/ 'male physician'. The second form is the non-sex-based masculine nouns. In these nouns, referents are not inherently male but are nevertheless grammatically masculine, such as *naher* /nahɾ/ 'river', *qalam* /qalam/ 'pen' and *baab* /baab/ 'door'.

Similarly, the first subcategory of feminine forms is the sex-based nouns. These are nouns that refer to human or animal females as *emra'ah* /ʔimɾaʔah/ 'women', *fatah* /fataah/ 'girl', *Sarah* /saɾaah/, *tabeeba* /tˤabiibah/ 'female physician', *labu'a* /labuʔah/ 'lioness'. The second form is the non-sex-based nouns. In these nouns, referents are not inherently female but are grammatically feminine, such as *tawelah* /tˤaawilah/ 'table', *sayyarah* /sajjaaɾah/ 'car'.

As a general rule in Arabic grammar, masculine nouns are not morphologically marked for masculinity while female nouns are marked for femininity. There are some gender indicators in the Arabic language. Arabic grammar books state how and when the feminine suffix (taa') should be added at the end of a noun to switch to the female gender for a specific noun or adjective; but as Omer (2005) explained, such rules are of no help for identifying personal names because around half of male names end with that (feminine taa').

The feminine suffixes (taa') or *taa' marbuuta*, which is pronounced as /ah/, also appears in several male names. Names as *Khalifah* /xaliifah/ and *Hamzah* /ħamzah/ are male names and classified as masculine on the basis of grammatical agreement, although they end with the female indicator /ah/. Another feminine marker is *alif madda* as in *Dua'a* /duʕaaʔ/ and *Walaa'* /walaaʔ/. However, names ending in alif madda are not feminine by default. Names like *Alaa'* /ʕalaaʔ/ and *Bahaa*' /bahaaʔ/ are male names that ends in /aʔ/ '*alif madda'*.

The third gender indicator is *alif maqsuurah*; this indicator relies on the form weight in the morphological measure in the Arabic grammar system.[8] This form has four types that are applied according to the form of the word. The first one is applied to adjectives. As the masculine form of the adjectives that are weighed as /faʕlaan/ is weighed as /faʕlaa/ in the feminine, as in: /ʕatˤʃaan/ (thirsty) as a male compared to /ʕatˤʃaa/ as a female. The second type is applied to comparative adjectives. The masculine form of a comparative noun (adjective) that is weighed as /ʔafʕal/, and is weighed as /fuʕlaa/ in the feminine, as in: /ʔakbar/ (bigger than) for a male compared to /kubraa/ for a female. The third case is applied to all verbal nouns that end in *alif maqsuurah* as in /buʃraa/ (good news). The fourth type is applied to feminine nouns and adjectives that naturally end with *alif maqsuurah* as in /salwaa/ (consolation that brings happiness).

Many of the masculine given names can be feminized by the addition of 'a' or 'ah' to the end (for example, the masculine *Khalid* /xaalid/ can be found feminized as *Khalida(h)* /xaalidah/.

2.5 Linguistic Research on First Names

In this section, a summary of linguistic research on first names is being introduced. It includes names in sociolinguistics, morphology, semantics, phonetics and phonology, sound symbolism and phonaesthetics.

2.5.1 Sociolinguistics

Naming is considered an essential factor that can be used to investigate cultural, social, religious and political influences and changes. Van Langendonck (2007, p. 307) stated that naming is 'a sensitive barometer for measuring social development…. due to the flexibility and adaptability of names.' Names reflect socio-cultural processes and change much faster and more sharply than the rest of language.

[8] The Arabic morphological measure that was established by the Arab grammarians Sibawayh and Ibn Jinni is used to weigh the structure of words. It helps in understanding the internal structure of words. As the majority of words in the Arabic lexicon are triliteral, Arabic grammarians abstracted the Arabic consonants ف, ع, ل. /f/, /ʕ/ and /l/ (to distinguish the different morphological processes that a word form may undergo. This is known as the root. See Alshdaifat (2014, p.17)

In the field of sociolinguistics, various studies have discussed naming in different languages. In his analysis of English names, Bannister (1997) studied the function of personal names in the period 1538 to 1700. He argued that names have a classificatory function, as names can classify a person according to their sex, ethnic origin, family status, and social status. Nausėda and Adminienė (2009), in their study of the sociolinguistic tendencies of baby names in English speaking countries, argued that baby names depend on culture and some specific factors. They note that British parents, for example, chose names because of their admiration of the royal family (names such as *Elizabeth*, *Harry*, *William*) or because of the impact of British musicians such as *Leona* after *Leona Lewis*.

The study of naming practice has been of great importance in other languages. Some research showed the impact of cultural traditions, ideological reasons and beliefs on naming, such as Kalkanova (1999) who studied Bulgarian names. Further research emphasised the importance of religious beliefs on naming, such as Britto (1986) in the Tamil society, and some explained the socio-cultural denotations and functions of names such as Agyekum (2006), who studied personal names among the Akan of Ghana.

In the Arab world, a significant body of research investigated the socio-cultural, religious and political factors affecting the naming and functions of personal names (Yassin, 1978; Abd-el-Jawad, 1986; AlQawasmi and Al-Abed Al-Haq, 2016). Change in personal names in different generations and diachronic analysis of naming has also attracted the attention of many researchers such as Gardner (1994), who studied female Arab personal names of five generations in Sudan.

Abdel-Jawad (1986) argued that personal names in Jordan reflect the values and the social, cultural and contextual atmosphere of the community. Names of babies reflect their parents' wishes, expectations of their children behaviours and their appearance. Abdel-Jawad (1986) also discussed the role of gender in naming practice. Parents tend to name their daughters with modern names and abandon traditional old-fashioned names and even tend to choose borrowed foreign names. In contrast, they tend to keep traditional male names, especially names that express religious affiliation.

Kayed and Lance (2001) examined the impact of politics in choosing names by studying names collected in 1999 from Jordanian and Palestinian families living in three different cities in Jordan: Amman, Zarqa, and Irbid. The data set consisted of given names of Jordanians and Palestinians of both genders, with years of birth ranging from the 1850s to 1996. They divided the data into seven time periods based on historical events in Palestine, Jordan, and Israel. They observed that when political tensions were high, Arab parents were more likely to name their children religious or nationalistic names than when tensions were low.

AlQawasmi and Al-Abed Al-Haq (2016) explained the impact of political conditions and other social events that Jordan went through on the naming practice during the 1970s to the early year of 2015. They indicated that Palestinian crises and their displacement from their home country and the Battle of ‘Karameh’ had affected Jordanian society in general and naming practice in particular, which led to the advent of new names that carry meanings indicating struggle and fight during the 70s, such as *Jihaad* /ʤihaad/ ‘holy war’ and *Nidaal* /nidˤaal/ ‘struggle’. The impact of politics on naming practised also appeared in early 2015, after the murder of the Jordanian pilot *Moath Al-Kasasbeh*, many Jordanian newborns have been given the name *Moath* /muʕaað/.

2.5.2 Morphology

In the field of morphology, several studies discuss different morphological patterns of personal names. Collazo (2016) argued that ‘names have a distinctive internal structure, which varies between language systems. Diachronically within the same language, name creation patterns evolve and change, just as the language itself and the surrounding society to which they are closely linked’ (p. 14).

Anderson (2007) explained that while many English names are derived from nouns or noun phrases, some personal names can be verbs or adjectives. In their study of virtue names in Early Modern England, Nair and Scherr (2012, p. 29) argued that: ‘*Modesty*, *Obedience*, *Patience*, *Silence*, and *Submission* occur both as abstract nouns and—although perhaps less frequently—as adjectives’ such as *Tacet*. They added that some names are in the verb forms as in *Submit*.

In a study of modern personal names in Hebrew, Muchnik (2017) asserted that the majority of names in Hebrew are derived from existing Hebrew words. He reported that personal names can be nouns, adjectives, and verbs and may also include compound forms. Compound personal names can be 'blended (e.g., *Avi'el*), hyphenated (e.g., *Bat-El*), or consisting of two separate words (e.g., *Li At*)' (Muchnik 2017, p. 377). Regarding feminine inflection, the study showed that the morphological system of Hebrew also applies the gender distinction for personal names as in the morphological inflection of vocabulary items; female names can be formed from a similar male name by adding the suffix -a, whether it is a noun as in *Amir* > *Amira* 'treetop', an adjective as in *Nadiv* > *Nediva* 'generous', or a present tense verb, as in *Me'ir* > *Me'ira* '[he /she] illuminates'. Other female suffixes include -yah (pseudo-theophoric) and -it. Although gender can be easily differentiated and presented in almost all words, Muchnik (2017) indicated that personal names are, in general, preferred in masculine forms for both sexes.

Rosenhouse (2002) investigated the morphosyntactic aspect of personal names in Hebrew and Arabic. He asserted that theophoric names (for males) are usually compounds (noun sentences) such as the Hebrew names with the following affixes: -el (e.g. *'Ari'el*), eli- (e.g. *'Eliyahu*), -ya (e.g. *Ovadya*), yo- (e.g. *Yonathan*), yeho- (e.g. *Yehoram*) and Arabic names beginning with Abd as in *Abd al-Rahman*, *Abd al-Karim*, or ending with Allah as in *Abdullah*. Rosenhouse added that 'Whereas in Arabic theophoric names seem to be restricted to male individuals, Modern Hebrew has used the ending -yah also for feminine names, due to its superficial similarity to the feminine ending**'** (Rosenhouse, 2002, p. 105).

Zumer (2009) reported one of the morphological issues regarding the feminine and masculine markers in the Arabic naming system in Yemen. He stated that 'A great number of Arabic nouns tend to inflect their feminine gender from masculine gender by adding the gender distinction marker (-ah), as in …..*Haleem /Haleemah*…, etc' (2009, p.24). He found that the new trend of naming patterns has changed, and the traditional Arabic gender marker is not observed in new Yemeni names as it was with old names.

Zawaideh (2006, p.3) in his diachronic study of personal names in Jordan concluded that:

> ‘Morphologically speaking, personal names in Arabic could be classified in two ways. The first is to classify personal names on the basis of their morphological structure (noun, adjective, and verb)….The second way of classifying personal names is to classify them on the basis of the verbal roots that underlie their derivation’.

Abdel-Jawad (1986) proposed that the majority of names in Arabic are derived from verbal roots such as the name *Khalid* /xaalid/ ‘immortal’, which is derived from the verb *khaluda* /xaluda/ ‘to be immortal’. He presented the most common morphological patterns of Jordanian names, which are shown in Table 2.3.

Table 2.3: Morphological patterns of Jordanian names in Abdel-Jawad (1986)

Form	**Example**	**Meaning**
assimilate epithet	/ʤamiil/ /ʤamiilah/	‘beautiful’
the active participle form	/θaʔiɾ/	‘revolutionary’
passive participle	/mamduuh/	‘praiseworthy’
intensive participle form	/baʃʃaar/	‘one who brings lots of good news’
verbal noun	/saʕd/	‘luck’

2.5.3 Semantics

Philosophers and semanticists have offered various classical and current theories about names to account for naming in languages. The problem is that valid arguments can be used to prove that proper names (including personal names) have sense as defined by Lyons (1981, p. 58); Fregean theorists), while others can be used to argue that they do not (Millian theorists). Coates (2006a) explained that proper nouns can be used to refer to things or people in context, but their relationship to their referent is arbitrary. Proper names, as a result, are pure referring expressions with no senses. However, this does not imply that they are meaningless. He stated that actually some people choose names for their babies relying on their etymological meaning besides other factors. (Coates, 2006b). Khoa (2010) suggested that the views on the meaning of names in the Millian and Fregean schools are both correct as names may convey both etymological and connotational content, and such content is determined relying on factors affecting the naming process such as tradition and culture.

In a study of Vietnamese personal names, Khoa (2010, p. 42) explained that 'semantically meaningful names may make reference to a person's sex or traditional gender characteristics.' In the Vietnamese context, names that carry the meaning of strength are used for males, while women tend to be given names that have a sense of beauty and softness. Based on semantic-lexical characteristics, Khoa (2010) asserted that, Vietnamese names can be classified into the following groups shown in Table 2.4.

Table 2.4: Name groups in Vietnamese

Name groups	**Example**
Names with real-world content	Animal names: *Hổ* 'tiger'. Vegetation names: *Lan* 'orchid' *Đào* 'peach'. Objects and materials: *Đồng* 'copper', *Cát* 'sand'. Colours: *Thanh*/*Lam* 'deep blue'.
Names from words denoting natural and social phenomena	Natural phenomena: *Mây* 'cloud'. Seasons: *Xuân* 'spring'. Directions: *Đông* 'east'. Place name: *Nga* 'Russia'. Names of heroes, celebrities, or fictional character *Trà Giang* 'a Vietnamese actress'.
Names from words denoting human beings and human activities	Psychophysiological and spiritual characteristics: *Mạnh* 'strength'. Material and professional characteristics: *Nông* 'peasant'.

There are similarities in the semantics of personal names in Arabic and Vietnamese; in both languages, names with etymological meaning that connote strength are used for males, while women tend to be given names that have the sense of beauty and softness. Classifications of names relying on the semantic lexical characteristics in Vietnamese are very similar to the Arabic classification explained in section 1.3.

In a cross-cultural study of names in five different communities in Scotland, Bramwell (2012) reported the importance of meaning in naming a child by the Pakistani, Algerian and Iraqi Kurd communities. The Pakistani and Algerian communities tended to give their children names that carried either religious or lexical meaning and avoided lexically opaque or meaningless names. Iraqi Kurds, on the other hand, preferred less religiously and more culturally/politically motivated names. They generally tend to use place names or lexical items as personal names, such as words for beauty, hope or names of mountains etc.

2.6 Phonology and Sound Patterns of Names

While the gender of some names can easily be inferred, such as *Johanna* for a female and *John* for a male, it is not always easy to explain how names get their gender. Alford (1988) demonstrated that names gender could be inferred from the semantics of the name, morphology through affixation and cultural knowledge of typical male and female names. However, a vast body of literature has suggested that the sound pattern of a name may reveal the gender of the person who bears it (Slater & Feinman, 1985; Cutler et al., 1990; Barry & Harper, 1995; Cassidy et al. 1999).

Slater and Feinman (1985) investigated potential sex-associated features in the structural characteristics of names. They compared the phonological structure of the given and preferred names of 489 North American college students. The names, collected using a questionnaire, were assigned values based on the number of phonemes in a name, the number of syllables in a name, the type of syllables in a name (open or closed), name-initial phonemes, name-final phonemes, and prosody. They found that female names have more phonemes, more syllables, at least twice the number of open syllables, and more frequently stress a non-initial syllable than male names. Female names tend to end in a vowel or sonorant consonant, while male names tend to end in obstruent consonants. Results also revealed that the structural features of the ideal or preferred names resemble the overall qualities of native English words, which tend to have few syllables and sounds, end with a consonant, and stress the first syllable. Apparently, Slater and Feinman (1985) are referring to English words of Germanic origin.

While female preferred names generally move in this tendency, it is to a smaller extent than male preferred names. Structurally, Slater and Feinman (1985) also argued that ending sounds reveal gender differences more than beginning sounds. This reflects the preference in the English language to generally focus on word endings to convey syntactically mandatory markers such as plural, e.g. *cats* or tense, e.g. *started* or to convert class, e.g. adjective to noun *rich* to *richness*.

Cutler et al. (1990) studied the differences between English male and female names in terms of stress pattern and number of syllables. They categorized the names in *The Oxford Mini Dictionary of First Names*, containing 1667 entries (884 female names, 783 male names).They found that female names are far more likely to have unstressed initial syllables and are significantly more likely to contain /i/ as their stressed vowel. They also explained that female names are longer than male names and are more likely to end in a vowel than male names are. They proposed that the masculine bias in the English lexicon, with nouns for profession for females being generated via suffixation (e.g. author > authoress), explains why female first names tended to be longer than male first names. They explained that female names had been formed from male names by adding a suffix, resulting in the lengthening of female names such as *Stephen>Stephanie*.

Lieberson and Bell (1992) investigated the phonological variations between male and female names in a study of white children's given names in New York State. They found that female names were more likely to end in schwa while male names were more likely to end in consonants; the /s/ sound was the most common ending sound in male names. They also found that female names were more likely to have a /ʃ/ in name-initial position.

Crystal (1993) considered the differences in the sound structure of first names for women and men. He commented on research by the Applied Psychology Unit at Cambridge who studied 1667 entries taken from a dictionary of English first names. He stated that female first names tend to be longer in terms of the number of syllables, tend to end in a vowel and regarding the stressed syllables of female names, he noted that the stressed syllables tend to have high front vowels /i/. On the other hand, Crystal argued that males tend to have monosyllabic first names, and the first syllable of polysyllabic names tends to be strongly stressed.

Considering the findings of Slater and Feinman (1985), Barry and Harper (1995) established a phonetic gender score (PGS) which is a quantitative scale that gives a positive or negative value to phonological features that are considered to be gender–correlated. It also predicts the gender of the name, relying on its phonological patterns. The scale assigns a score to a name based on two factors: one measures phonetic characteristics of the entire name, and another the final phoneme and the two values are added together to determine the final score; Table 2.5 shows the PGS scoring criteria. The PGS was created with the intention of generating positive scores for female names and negative values for masculine names. They applied the PGS to the 100 most popular male and female names from 1950 and 1990 in Pennsylvania State and found that that there was a strong correlation between a name's PGS score and the gender of its referent. They also found that the average score for the most popular baby names had risen over time for both girls and boys, which indicated that the phonetic features of both male and female names had become more 'feminine'.

Table 2.5: Barry and Harper's PGS (1995)		
Phonetic characteristics	**Example**	**Score**
The accent is on the second or later syllable	*Elizabeth, Nicole*	+2
If the accent is on the first of three or more syllables	*Caroline, Christopher*	+1
If the name has one syllable	*John, James*	-1
If the accent is on the first of two syllables and the name has six or more phonemes.	*Robert, Edward*	-2
If the last phoneme is an unstressed schwa-like ('uh' or 'ah') sound	*Ella, Hannah*	+2
If the last phoneme is any other vowel	*Melanie, Audrey*	+1
If the last phoneme an obstruent consonant, which is either fricative (f, v, th, s, or z) or affricate (sh, ch, or j).	*Joseph, James*	-1
If the last phoneme is a stop consonant (p, b, t, d, k, or g)	*Jacob, Richard,*	-2

Cassidy et al. (1999) analysed the sound structure of a large number of English first names. One of differences they found was, women's names tend to be longer than men's, and tend to end in vowels. Men's names, on the other hand, tend to have more monosyllabic names and tend to end in plosives. They also stated that male names tend to have word-initial stress (trochaic) while female names have word-final (iambic) stress. They also examined whether English speakers were aware of the correlation between the name's phonology and the gender to which it belongs. They created nine contrastive pseudonames (male-sounding vs. female-sounding) that differed in their stress patterns, final phoneme or number of syllables. Adults and four-year-old children were given a list of pseudonames and asked to match male and female paper dolls. Children and adults alike matched male and female dolls with pseudonames that indicated the expected gender, with no previous knowledge of the pseudonames. The link between the sound structure of a name and gender showed that speakers used some of the phonological cues of name gender

The idea of using pseudonames, assuming that people will rely only on phonology on inferring the gender of the name, was also applied by Whissell (2001). She created pseudonames using male or female weighted sound patterns, particularly stress, number of syllables and final phoneme. Participants, who were students at Laurentian University in Ontario, were asked to assign the gender of these names. The assignment of gender to the pseudonames was analysed relying on the phonological differences between male and female names identified in previous research. Results showed that participants inferred gender using the phonological cues of the names with no reference to meaning or any other information.

Wright et al. (2005) investigated the impact of phonology in determining preferences for names in ordering, mainly why male names usually precede female names when they are in pairs, e.g. *Romeo and Juliet.* They analysed the 500 most popular American male names and the 500 most popular female names of 1998 and found that female names are longer than male names, end in vowels, particularly schwa, and tend to have more long vowels or diphthongs than male names. Male names, on the other hand, are more likely to be monosyllabic, begin with voiced obstruents and end in consonant clusters. Table 2.6 and Table 2.7 present a summary of the findings of previous research of phonological cues to gender as adapted from Frederickson (2007).

Table 2.6: Phonological cues to male names in English.

Study	**Feature**
Slater and Feinman (1985), Barry and Harper (1995)	A smaller number of phonemes
Slater and Feinman (1985); Cutler et al. (1990); Barry and Harper (1995); Cassidy et al. (1999)	A smaller number of syllables
Slater and Feinman (1985); Cutler et al. (1990); Barry and Harper (1995); Cassidy et al. (1999)	Initial stress
Slater and Feinman (1985); Cutler et al. (1990); Lieberson and Bell (1992); Barry and Harper (1995); Cassidy et al. (1999)	Consonant final
Slater and Feinman (1985); Barry and Harper (1995); Cassidy et al. (1999)	Stop consonant final
Slater and Feinman (1985); Barry and Harper (1995)	Obstruent consonant final
Cassidy et al. (1999)	Word initial consonant clusters

Table 2.7: Phonological cues to female names in English.	
Study	**Feature**
Slater and Feinman (1985); Cutler et al. (1990); Barry and Harper (1995); Cassidy et al. (1999)	A larger number of syllables
Slater and Feinman (1985)	Open syllable
Slater and Feinman (1985); Cutler et al. (1990); Barry and Harper (1995); Cassidy et al. (1999)	Non-initial stress
Slater and Feinman (1985); Cutler et al. (1990); Barry and Harper (1995); Cassidy et al. (1999)	Vowel final
Slater and Feinman (1985)	Sonorant consonant final
Slater and Feinman (1985); Cutler et al. (1990); Lieberson and Bell (1992); Barry and Harper (1995); Cassidy et al. (1999)	Schwa final

In Jordan, little research has examined the sound patterns in male and female names. Previous research on names was largely interested in social factors of naming, and some dealt with the morphology of names. The phonological difference in name preference between male and female names was briefly discussed in AlQawasmi and Al-Abed Al-Haq (1996), who detected the difference in naming newborns in Jordan from a sociolinguistic point of view. In their analysis, they found that modernization and urbanization affected the naming practice for males and females. They stated that ‘there is a strong tendency to abandon traditional, long, and compound names in favour of modern names which are described by many parents as being short, soft, and easy to write and pronounce’ (AlQawasmi and Al-Abed Al-Haq, 2016, p. 16). They explained that such tendency was mainly noticed in female names more than male names Such as /mahaa/, /ɾanaa/, /ɾubaa/, /nuuɾ/, /lamaa/, /ɾiim/, /saamii/, or /ɾaamii/. It is worth mentioning that MSA linguists use a double vowel to refer to the long vowel e.g. /ii/, /aa/, /uu/, unlike Western linguists who use /i: /, /a: /, /u:/ to refer to long vowels.

In another study of Jordanian names, Zuraiq (1999) analysed the linguistic and non-linguistic factors influencing name giving in Jordan. He found that parents tended to choose names with consonants that are easier to pronounce and avoid those that need more effort when being produced, such as the velar fricative /x/, the pharyngeal /ʕ/ and the emphatic interdental fricative /ðˤ/**.** Zuraiq (1999) also explained that parents were more likely to choose names with more vocalic segments for male names and fewer vocalic segments and shorter names for females. The study also revealed that there are three main phonetic or phonological patterns followed by parents in choosing names for multiple children. First, to name all children with names that have the same first sound, like /ʃaadi/ and /ʃariif/ for males, and /ʃams/ and /ʃaðaa/ for females. Second, other parents name their male children by starting with the same sound (like /muniir/ and /maʤdi/), and females with another sound like /lamiis/ and /liin/). Third, others choose certain rhyme for the names of females (for example, /hanaa/, /ranaa/ and /lamaa/) and another certain grammatical forms for males (for example, /ʔamjad/, /ʔakram/ and /ʔaʃraf/).

Building on the previous research, first names in Jordan are analysed in Chapter 4 in terms of consonant types, vowel types, name beginning and ending sounds, type of syllables and length of names. This analysis aims to answer one of the research questions whether phonological patterns in male names are different from those in female names in Jordan and whether gender patterns are different from in English.

2.7 Sound Symbolism

In this section, I introduce the previous research on sound symbolism in names. This section includes an overview of sound symbolism, types of sound symbolism, sound symbolism cross-linguistically, the bouba-kiki effect and sound symbolism in Arabic.

2.7.1 Sound Symbolism: an Overview

The assumption that the physical form of a linguistic signal is independent of its meaning is attributed to Saussure (1916), who stated that the relation between the signifier and the signified is arbitrary. Saussure asserted that the idea conveyed by a word is not linked to the ordered set of sounds that make up the word. He explained that the signifier (e.g., the acoustic form of the word, the sound) is not tied to the signified concept (meaning or mental impression). This can be proved by the fact that there are different words for an idea in different languages.

Elsen (2017) explained that the dominance of Western European and US-American research, as well as Ferdinand de Saussure's finding that the relationship between shape and meaning of the linguistic sign was arbitrary– except for a few onomatopoetic phrases– caused sound symbolism research never to become popular. However, subsequent studies have shown that the sounds of words are at least to some degree systematically related to word meaning. There are several instances where human language and meaning are related as in involuntary utterances such as cries of pain or hiccups. Hinton et al. (1994) explained that, in these cases, sound only has a meaning in that it directly reflects an internal state of the body and mind.

Crystal (2008, p.443) defined sound symbolism as: ‘a term used in semiotics and linguistics to refer to a direct association between the form and the meaning of language: the sounds used reflect properties of the external world, as in cases of onomatopoeia (e.g. *cuckoo*, *murmur*, *crash*) and other forms of synaesthesia (e.g. /sl/ in such words as *slimy*, *slither*). Sound-symbolic words are also sometimes referred to as mimetic'. It is worth mentioning that the term synaesthesia is usually used to refer a neurological condition in which information meant to stimulate one of your senses stimulates several of your senses (Ramachandren and Hubbard, 2001)

2.7.2 Types of Sound Symbolism

Hinton et al. (1994) divided sound symbolism into four different categories: corporeal sound symbolism, imitative sound symbolism, synthetic sound symbolism and conventional sound symbolism. They defined corporeal sound symbolism as ‘the use of certain sounds or intonation patterns to express the internal state of the speaker, emotional or physical.’ (p. 2) Some examples may include sounds as coughing or hiccupping to express physical state, and pitch level, range and variability, loudness, and tempo to express emotional state. Involuntary expressions of pain or bodily states could be counted as an example of this type of sound symbolism. Although not universally classified as parts of language; some researchers include things like coughing and hiccupping in their typologies of sound symbolism.

The second category, imitative sound symbolism, includes words and phrases representing environmental sounds, e.g. *bang*, *knock* and *swish*, sounds made by animals (e.g. *meow*, *moo*, *tweet*) and rhythmic movements translated into sounds (e.g. *ding dong*).

Synthetic sound symbolism, the third type, is the process whereby certain vowels, consonants and suprasegmentals are associated with properties of objects as size or shape. Magnitude sound symbolism, which is the use of contrasting sounds to represent variation in size of an object, is the best-known example of this type. However, properties like movement, shape, and colour can also be used as an example of the same type of sound symbolism. For example, palatal consonants and high vowels are used for diminutive forms and words representing small-sized objects. For example, in Ewe (Niger-Congo language) , the word for 'small' is *kítsíkítsí*, with high front vowels, while the word for 'large' is *gbàgbàgbà*, with back vowels, French *petit* 'small' versus *gros* 'large' shows the same vowel pattern (Ohala, 1994).

The last type, conventional sound symbolism, is the association of certain phoneme and clusters with certain meaning: e.g. the /gl/ of *glitter*, *glow*, *glimmer*, and the /fl/ in words as *flutter*, *fly*, *flap*, *flip*, with a meaning of movement through the air. The last type, unlike the previous three, which show many cross-linguistic similarities, may be considered language specific due to the phonetic specification of the segments involved. (Hinton et al., 1994).

Conventional sound symbolism can be related to the study of *phonaesthemes*. The term phonaesthemes has been used by many scholars in studying the sound meaning relationship to describe the semantic significance of certain letters or words, especially at the beginnings of words. The term *phonaesthemes* was first used by Firth (1930, p.184), who characterized them as 'initial and final phone groups not ordinarily recognized as having any function'.[9] He identified units of phonological segments that appear with the same kind of meaning in several words, such as the unpleasant

[9] Explained in more detail in section 2.8.

pejoration /sl/ of *slack*, *slouch*, *slush*, *sludge* the -ump of *slump*, *bump*, *dump*, the hanging and falling in /dr/ as in *drip*, *drop* and clumsiness or stupidity in /kl/ as in *clay*, *clod*, *clumsy*. Firth (1930, p.185) added that 'The more consistently similar sounds function in situations having a similar affective aspect, the clearer their function'.

Sturtevant (1947) recognised that some initial clusters were semantically meaningful as /kr/ (sudden or loud noise) as in *crash*, *crack*, *crank*, /gl/ (light) as in *glare*, *gleam*, *glow*, *gloom*, and /fl/ (fast movement) as in *flicker*, *flitter, flame*, *flounce*, *flash*.

2.7.3 Sound Symbolism (Cross-Linguistically)

The beginning of scientific interest in natural associations of sounds and meaning was marked by Sapir (1929), who explained how certain vocalic and consonantal sounds have a symbolic significance unrelated to the associative and linguistic value of the word.

In a study with English-speaking subjects, Sapir (1929) asked 464 high school students to match different sized tables to nonsense words. Large size tables were expected to be matched to nonsense words containing the vowel /ɑ/ (e.g. *mal)*, in contrast to smaller or small size tables to similar words containing the vowel /i/ (e.g. *mil)*. Approximately 80% of subjects matched *mal* with the large table and *mil* with the small one. The results indicated that words containing high, front vowels are associated with small size while low back vowels are associated with large size.

Sapir attributed the result of his experiment to acoustic or kinesthetic factors, or a combination of both. Acoustically, certain vowels have a greater volume than others. Kinesthetic refers to the role of the complex neuromuscular reflex system particularly tongue position and resonance cavity.

> 'In the case of /i/ the tongue is high up toward the roof of the mouth and articulates pretty well forward. In other words, the vibrating column of air is passing through a narrow resonance chamber. In the case of /ɑ/, the tongue is very considerably lowered in comparison, and also retracted. In other words, the vibrating column of air is now passing through a much wider resonance chamber' (Sapir 1929, p.16).

Yamauchi et al. (2019) explained that there are two major streams of research on sound symbolism concerning two visual dimensions of objects: size and shape. Previous research on size-related sound symbolism has shown that smaller objects tend to be associated with front and high vowels, while larger objects tend to be associated with back and low vowels. Studies on shape-related sound symbolism, on the other hand, focused on the associations between round shapes and sonorants, and between angular shapes and obstruents (e.g., Berlin, 2006; Nielsen & Rendall, 2011).

Newman (1933) performed an experiment supporting size symbolism, as well as brightness (dark vs. bright) contrast among English speakers. A list of 113 word pairings with 9 vowels and 15 consonants was created. Participants were asked to choose the symbolically 'larger' word of each pair; the same pairs were then presented in random order, and the participants were asked to choose the 'darker' word. Newman (1933) found that the small-to-large symbolism for vowels corresponded to the sequence of receding tongue position, frequency, increasing oral cavity and vocalic length. The *dark vs. bright* symbolism, on the other hand, appeared to be based only on articulatory and frequency factors; vocalic length and size-of-mouth-opening appeared to have no effect on the symbolic assessment of relative darkness.

Newman's results generally confirm Sapir's earlier conclusions. Results revealed that English speakers judge all back vowels to be larger than all front vowels. Regarding consonants, Newman (1933) stated that the speakers considered voiced obstruents to be larger than voiceless obstruents , symbolic scale of consonants from small to large of articulatory position would be dental, labial, palatal (t, p, k; d, b, g; n, m). This symbolic scale further follows the sequence of voiceless to voiced (t, d, p, b; k, g, s, z; c, j, etc.). As in the small-to-large symbolism, a voiceless-to-voiced sequence is followed in the bright to dark symbolism; the voiced consonant, having more acoustic body than voiceless consonants, which imply an impression of darkness as well as largeness. The articulatory sequence of symbolic scale for bright to dark would be the reverse of size symbolism; palatal, labial, dental. With these scales, dental sounds are considered dark but small, while palatal sounds are bright but large.

Jespersen (1922) emphasized that back vowel /u/ in *blunder*, *bung*, *bungle*, initial /sl/ as in *slack*, *sloppy*, *slattern*, *slut*), initial labials as /f/ in (fop, foozy, fogy), sound /ʃ/ or /ʧ/ after vowels as in *trash, tosh, slosh, botch, patch* all carry symbolic expressions of dislike or disgust. He also listed some other sounds that are used to express movement as the /fl/, /sl/, /gl/ in *flow, slide* and *glide*.

Preziosi & Coane (2017) suggested that sound symbolism developed based on the following: the physical properties of referents, the speech gestures found in a word which is identified relying on the shape created with the mouth when pronouncing a phoneme such as rounded vs. unrounded vowels, and the frequency pitch of the phonemes found in the word. Based on that, Preziosi & Coane (2017) argued that almost all languages give evidence supporting sound symbolism effects and that sound symbolism mappings should be similar cross-linguistically.

Jespersen (1922) pointed out that the vowel /i/ is used more frequently to express the female sex, as it is used to describe what is small and weak. He explained that these characteristics, weakness and smallness, are often taken to be representative of females. He also argued that the vowel /i/ is used as the female suffix in different languages, as in Sanskrit, *vṛkī* 'she-wolf' and *naptī* 'niece'. He added that the vowel /i/ can be found in many feminine suffixes. Table 2.8 shows some examples from Latin, French and Greek.

Table 2.8: Feminine suffixes in different languages

Language	**Suffix**	**Example**
Latin	-itta	*Julitta*
French	-iette	*Henriette*
Greek	-issa	*basilissa (queen)*

Ohala (1994) stated that a rich literature supported the idea of associating natural classes of speech sounds with the expression of size in different languages. He listed examples of words and morphemes expressing 'small' and 'large' in the following languages: Ewe, Yoruba, Spanish, Greek, English and French. He found that: high front vowels like [i ɪ y e], [-grave] consonants,[10] voiceless consonants, high tone are predominant in expressing the meaning of 'small', while low back vowels like [ɑ ʌ ɔ o], [+grave] consonants, voiced consonants, and low tone are predominant in expressing 'large'. Tables 2.9 & 2.10 include some examples Ohala (1994) listed in the above languages.

Table 2.9: Words and morpheme expressing 'small'

Language	**Word, morpheme**	**Translation**
Ewe	[kítsíkítsí]	'small'
Yoruba	[bírí]	'be small'
Spanish	[ˈtʃiko]	'small'
Greek	[mikros]	'small'
English	[-i]	diminutive suffix
French	[p´tit]	'small'

Table 2.10: Words and morphemes expressing 'large'

Language	**Word, morpheme**	**Translation**
Ewe	[gbàgbàgbà]	'large'
Yoruba	[bìrì]	'be large'
Spanish	[gordo]	'fat'
Greek	[makros]	'large'
French	[gʁɑ̃]	'large'

Wrembel (2010) investigated whether or not non-native speakers of English can relate sound symbolic associations between the English vowel sounds and a provided set of adjectives. She asked first and second-year Polish students at the School of English at

[10] [+grave] sounds involve the lips as either passive or active articulator, or any articulation in the soft palate or throat. Lionnet and Hyman (2018, p. 602) explained that 'The acoustic feature [grave], first proposed by Jakobson et al. (1952), but excluded from the set of (mostly articulatory) features proposed by Chomsky and Halle (1968). This feature distinguishes in particular the [-grave] laminal [ǀ, ǂ] from the [+grave] apical [!, ǁ] and labial [ʘ] clicks'.

Adam Mickiewicz University, Poland, to match a particular phoneme to eight opposite adjective pairs. The adjectives represented characteristics of objects, i.e. size, colour, texture, shape and emotional loading. The pairs used in her study appear as *big vs. small*; *bright vs. dark*; *soft vs. hard*; *pleasant vs. unpleasant*; *high vs. low*; *happy vs. sad*; *female vs. male*; *quiet vs. aggressive*. Results of the study were consistent with the previous research in which specific sounds are associated with particular attributes and adjectives. Table 2.11 shows different meanings that vowels are associated with.

Table 2.11: Sound symbolic association of English vowels.

Vowel type	**Meaning associated with**
front vowels	bright, high, happy and aggressive
central vowels	small, dark, low, male and sad
back vowels	big, dark, pleasant, low, sad and male
high vowels	pleasant
mid vowels	dark, low, sad, and male
the low vowels	big, dark, low, sad, aggressive and male

Shinohara & Kawahara (2010) studied the impact of sound symbolism and the association of particular sounds and natural classes with different meanings cross-linguistically. They examined the association of size with three different phonetic properties (voicing of obstruents, vowel backness, and vowel height) in Chinese, English, Japanese, and Korean. Their results showed that vowel backness was associated with largeness in all languages studied. Voicing, on the other hand, was associated with largeness in Chinese, English, and Japanese, but not in Korean.

In a similar investigation, Haynie et al. (2014) studied some common patterns of sound symbolism in 120 indigenous languages of Australia. They investigated the association of meanings of ‘smallness’ or ‘nearness’ with front vowels and palatal consonants and meanings of ‘largeness’ or ‘distance’ with back vowels and velar consonants. Their results linked small/near meanings with close/front articulation.

Bordbar and Kambuziya (2016) conducted a contrastive study to trace sound symbolism in three languages, English, Persian, and Spanish. Their data consisted of 140 Persian onomatopoeic forms that were chosen from Persian dictionaries and their counterparts from English and Spanish dictionaries. These symbols were then classified into the four groups of sound symbolism as explained in Hinton et al. (1994): imitative, conventional, corporal, and synthetic sound symbolisms that are defined earlier in section 2.3.2. Results revealed that in imitative sound symbolism in the three languages, the same sounds express the same meaning. Table 2.12 shows some examples.

Table 2.12: Sounds express the same meaning in English, Persian, and Spanish. Bordbar and Kambuziya (2016)

Sound	**Meaning the sounds associated with**
voicelessness and the phoneme /l/	water
/p/, /s/, /f/	gas
stops, and nasals	explosion/ abruptness and friction/dryness/swiftness.

They also found that conventional and corporal sound symbolism occur less frequently than imitative sound symbolism and no correspondence was observed in synthetic sound symbolism.

2.7.3.1 Frequency Code Hypothesis

Ohala (1994), relying on previous research on size sound symbolism, suggested what is called the Frequency Code hypothesis. In this hypothesis, Ohala (1994) explained that words connoting smallness are more likely characterised by having high acoustic frequency segments, and on the other hand, words connoting largeness more likely contains low acoustic frequency segments. He explained that:

> ‘In consonants, voiceless obstruents have higher frequency than voiced because of their higher velocity of the airflow, ejectives higher than plain stops (for the same reason) and dental, alveolar, palatal and front velars higher frequencies than labials and back velars’ (Ohala 1994, p. 335).

In Ohala's frequency code, high-frequency vowels notably /i/ are associated with small size, sharpness, and rapid movement. Low-frequency sounds, on the other hand, e.g. /u/, are related to large size, softness and heavy, slow movements. (Ohala, 1994). High pitch vowels and voiceless consonants (/i/, /e/, /p/, /t/, /k/) are associated with femininity, politeness, friendliness, smallness and compliance while low pitch vowels and voiced consonants (/o/, /u/ ,/b/, /g/, /d/) are associated with masculinity , dominance and largeness. (Suire et al. 2019; Gussenhoven, 2004; Pisanski and Rendall, 2011; Rendall et al. 2007).

Klink (2000) explained that in regards to the level of frequency, a higher frequency is associated with

(a) Fricatives relative to stops,
(b) Voiceless stops relative to voiced stops,
(c) Voiceless fricatives relative to voiced fricatives

Shrum and Lowrey (2007) explained that previous literature supported the notion that voiceless consonants are generally perceived as smaller, lighter, and sharper than voiced consonants, and fricatives are perceived as smaller, lighter, and faster than stops (e.g. Folkins and Lenrow, 1966; Klink, 2000; Newman 1933).

In their study that is consistent with the frequency code hypothesis, Kawahara et al. (2018) studied the effect of sound symbolism in Japanese Pokémon names. Pokémon started as a video game in 1995 by Nintendo and then as children's cartoon in which fictional creatures are collected, trained and then used to battle by trainers. Pokémon characters evolve into different, related forms with new names. Each Pokémon character officially has size, height, and strength parameters that affect that Pokémon's attack, defence and speed.

They tested the effects of voiced obstruents, mora counts, and vowel quality on Pokémon characters' size, weight, strength parameters, and evolution levels of these

Pokémon. The results revealed that the number of voiced obstruents in Pokémon names correlates positively with size, weight, evolution levels, and general strength parameters, except for speed. Relating such results to Ohala's frequency code, in which sounds with low frequency should be perceived as large, they explained that the voiced obstruents are characterized by low frequencies in Japanese, so they should invoke 'large' images.

Relying on size-pitch effect research, according to which low-pitch sounds are associated with bigness and high-pitched sounds are associated with smallness, Auracher (2017) investigated the association between place of articulation and size, with the hypothesis that back vowels are associated with bigness and front vowels with smallness. Thirty native Japanese speakers were asked to assign nonsense words to pictures of animals or emotional body postures. Results showed that pseudowords that have back vowels were assigned to pictures showing big animals or dominant behaviour. In contrast, pseudowords that have front vowels were assigned to pictures showing small animals and submissive behaviour.

A similar study that shows the frequency code hypothesis in other languages is Berlin (2006), who investigated sound-symbolic patterns in birds and fish names in Huambisa (a North Central Peru language belonging to the Jivaroan language family). This study showed that English speakers, presented with a list of bird and fish names in Huambisa, were able to correctly guess which names were bird names and which were fish names. A linguistic analysis of bird and fish names shows that bird names have high acoustic frequency segments such as front vowels that are associated with rapid motion, whereas fish names have low-frequency segments such as labial consonants and nasal consonants that are associated with slow continuous flow.

Testing the hypothesis of association of gender with low/high-frequency sounds, Suire et al. (2019) studied sound symbolism in French first names. They analysed the most popular 100 female and 100 male names for each decade, ranging from 1900–1909 to 2000–2009 and recorded the vowel's place of articulation, the vowel's nasality, the consonant's manner of articulation and the consonants' voicing in each syllable of the names. Results showed that 'Low-frequency vowels (i.e. back and nasal /o/, /ã/) were more likely to be found in masculine names while higher frequency vowels (i.e. front and non-nasal /i/, /e/), as well as central vowels (i.e. /a/), were more frequent in female names' (Suire et al.2019, p. 10). However, their results contradict the frequency code hypothesis regarding consonants, as the mean number of voiceless fricatives (i.e. /f/, /s/ and /ʃ/) was higher in male than female names within the final stressed syllable.

Morton (1977), who examined the kinds of vocalization that many animals use during competitive encounters, proposed that the frequency code hypothesis is inspired by the 'motivation-structural rules' theory. He found that animals that are confident, aggressive and threatening use low-pitched vocalizations, while non-threatening or submissive animals produce high-pitched vocalization. One familiar example is the dog's aggressive 'growl' and submissive 'yelp'. The hypothesized reason behind this is that the frequency of vocalizations reflects a projection of the individual's body size.

Sound symbolism has been investigated in name-related data, such as given names (Cutler et al. 1990; Whissell, 2001; Sidhu & Pexman, 2015), nicknames (de Klerk & Bosch 1997), brand or product names (Klink, 2000; Shrum and Lowrey, 2007), and names of fictional characters, such as Pokémon (Kawahara & Kumagai 2018, Kawahara et al. 2018). The following section considers sound symbolism in brand names, followed by sound symbolism related research on first names.

2.7.3.2 Sound Symbolism in Brand Names

Previous research in this field shows that sound symbolism may affect the attractiveness of the products and their prices (Bolts et al., 2016; Kawaharaa et al., 2018; Klink, 2000; Yorkston and Menon, 2004).

Schloss (1981) analysed the linguistic attributes of real brand names in English from 1975 to 1979 and reported an overrepresentation of the letters *a*, *b*, *c*, *k*, *m*, *p*, and *s*, when compared to the occurrences of these letters in the English dictionary. Vanden Berghet al. (1987) duplicated Schloss study and investigated brand names from the years 1971 to 1985. Their study included top 479 US brands, classified according to certain linguistic qualities such as phonetic (plosives as in *Kodak*), orthographic (use of acronyms), morphological (compounding brand names) and semantic characteristics. Their study showed that initial plosives represented by the letters *b, c, d, g, k, p, q, t* appeared in the top 200 brand names listed in the annual Marketing and Media Decisions from 1971 to 1985.

As previously discussed, sound symbolism conveys information such that high-front vowels represent associations with smaller size and less power than low-back vowels, which, in turn, connote greater size, and more power. Klink (2000) showed that using front vowels in brand names conveys attribute qualities of smallness, lightness, mildness, thinness, fastness, coldness, bitterness, femininity, weakness. Building on the frequency code hypothesis (Ohala 1994) and his classification of the level of frequency explained earlier, Klink (2000) suggested that the following brand name characteristics are perceived as smaller, faster, lighter, sharper, softer, and more feminine

1. Products with brand names containing fricatives as opposed to stops.
2. Products with brand names containing voiceless stops as opposed to voiced stops
3. Products with brand names containing voiceless fricatives as opposed to voiced fricatives.

Pogacar et al. (2015) argued that sound symbolism played an important role in brand name attractiveness. They examined sound symbolism in top brand names by testing the sound patterns in these names. They compared sound frequencies between top brand names and a sample of general brand names. Results showed that top brand names displayed different sound patterns from general brand names.

They explained that back vowels are generally underrepresented in top brand names, except for and ‘o’ in ‘Posh’. Back vowels such as ‘u’ in ‘Budweiser’ may have negative associations as they carry the sound symbolic meaning large, masculine, slow and dark, whereas front vowels are the most common vowel sound among top brand names as they carry the sound symbolic meanings small, feminine, fast, light, and angular.

They argued that product category is also a likely moderator of positive and negative sound perceptions. For example, ‘front vowels are more common among electronics in top brand names than back vowel sounds, possibly because they convey smallness and fastness, which are desirable attributes for electronics’ (Pogacar et al., 2015, p. 560).

Relying on the previous findings that front vowels connote meanings of being small, fast and sharp, whereas the back vowels connote meanings of things that are big, dull and slow, Shrum and Lowery (2007) investigated this hypothesis in brand names. They asked French-, Spanish-, and Chinese-speaking participants who were bilingual in English to indicate their preferences of a set of word pairs as a brand name for an SUV, a hammer, a 2-seater convertible, or a knife. Each word pair differed only by one vowel; front /back vowel contrast. The results of this experiment were consistent with the expected interaction between vowel sound and product category; brand names with front vowel sounds were preferred over names with back vowel sounds for the categories of convertible and knife. On the other hand, brand names with back vowel sounds were preferred over names with front vowel sounds when the product categories were SUV or hammer.

2.7.4 Bouba-Kiki Effect

One of the well-documented examples of a sound-symbolic relation between the phonetic features of the sound and the physical characteristics of the object is the bouba-kiki effect. The bouba-kiki literature demonstrates that visual shapes (rounded or angular) seem to be associated with lip movements when uttering the vowel /u/ or /i/ (rounded or stretched lips).

The experiment was first conducted by Kohler (1929) on the island of Tenerife (where the primary language is Spanish) by showing participants a picture of two figures and asking them which one was called *takete* and which one was named *taluma*. The results showed that the majority of the participants assigned the name *takete* to the jagged, starlike figure and *baluma* to the rounded figure. This can be associated with the shapes of the lips when uttering the vowels in these words, as they are more curved in *baluma* than in *takete*. In his original experiments, Kohler (1929) called the stimuli *Takete* and *Baluma*. He later renamed the *baluma* stimulus *maluma* (Kohler, 1947).

Additional studies have also tested the effect of the baluba-takete effect in other languages. Davis (1961) used drawings similar to Kholer's pair to test the effect of bouba-kiki on Swahili speakers in Tanganyika. Citizens speak Kitongwe (Bantu language) but learn Swahili at school, which is considered as the lingua franca. Davis changed *maluma* into to *uloomu* because *maluma* means 'mother's brother' in certain Bantu languages. He asked 8-14 year-old children to match *takete* and *uloomu* to the jagged or the rounded figure. He found that participants preferentially matched the nonsense word *takete* with a jagged image and *uloomu* with a curved image, and this was also true for a control group of English children.

Later studies were also conducted to check this effect cross linguistically. For example: Czech-speakers (Tarte, 1974) and Tamil speakers in India (Ramachandran and Hubbard, 2001).

Using similar shapes to those used in the original experiment by Kohler, but changing the names of the invented terms slightly, i.e. *bouba* and *kiki*, Ramachandran and Hubbard (2001) found similar results to the previous study. People tend to label the jagged shape as *kiki* while labelling the rounded shape as *bouba*. According to Ramachandran and Hubbard, there is a neuropsychological account of the phenomenon, as this could be related to the nature of the connections that exist between sensory and motor parts of the brain. The visual shape of the object, for example, is linked to the shape of our lips when we utter the matching word, which can be open and rounded or narrow and wide. This is linked to the way our tongue moves to create the word itself; bouba necessitates a more rounded movement of the tongue on the palate, whereas kiki necessitates a more sharp movement. This makes it more likely that bouba will be associated with the rounder object, while *kiki* will be associated with the sharper, spikier object.

Nielsen and Rendal (2011) replicated the traditional maluma-takete experiment and then manipulated the consonant content of the original words, changing some experimental conditions: they used word pairs like *maleme* and *takuta* instead of the original words *maluma* and *takete*. This change was undertaken to distinguish between the effect that consonants and vowels play in preferential matching of the nonsense words with the curved and angular shapes. A cohort of 24 students at the University of Lethbridge, Canada, were shown two images side-by-side (one curved, one jagged) with two words below and were asked to label the images with the words. Results indicated that, pseudowords containing sonorant consonants (/l/, /m/, /n/) are assigned more to round shapes, while pseudowords containing other consonants; obstruent consonants (/t/, /k/, /p/) are assigned to spiky shapes. The results indicated that consonants rather than vowels were tracked for sound-shape correspondences.

> 'There are clear spectral density and attack differences between /k/ and /m/ that make /k/ a relatively harsh (or strident) consonant and /m/ a relatively mellifluous (or sonorant) consonant. These basic differences in spectral structure might naturally tend to imply or conjure "harsh fractured, or jagged" constructs on the one hand and "smooth connected, rounded" constructs on the other, and these effects might characterize other strident and sonorant consonants' (Nielsen and Rendal 2011, p. 116).

Similarly, D'Onofrio (2014) identified the phonological features that affect the bouba-kiki experiment. She demonstrated that vowel backness, consonant voicing and consonant place of articulation are essential in representing the bouba-kiki shapes (rounded vs. angular) opposition. Results showed that words that have voiced consonants (/b/, /d/ or /g/), labial consonants (/b/ or /p/) and back and/or rounded vowels (/u/ or /ɑ/), were assigned with round shapes more than their counterparts (/t/, /k/; /i/, /e/).

Other research in the field extended to test the effect of Kohler's maluma-takete effect on animal and insect naming. Berlin (2006) conducted an experiment in which he asked sixty-two undergraduate anthropology students to invent their own names for particular birds (rail and tinamous). Invented names for rail and tinamous show that high-front vowels /i/ and /e/ are preferred for the angular, sharp, long-legged rail, back vowels /o/

and /u/ for the rounded short-legged tinamous. With consonants, voiceless stops /p/, /t/, and /k/ are favoured in the invented names for rail, much less so for tinamous. Students were then given two names *Takete* and *Maluma* and were asked to assign these names to the birds. 92% of the students assigned *Takete* for the angular, sharp, long-legged rail, *Maluma* for the rounded, short-legged tinamous. Reasons students gave for their naming response include that rail is fast long thin, light, sharp and skinny while tinamous is big, thick, fat, round, heavy, soft and slow.

2.7.4.1 Bouba-Kiki Effect in First Names

Relating this effect to the study of names, Sidhu and Pexman (2015), inspired by Kohler's experiment, ran an experiment to test whether or not the bouba-kiki effect can extend to real first names. in their study, Sidhu and Pexman (2015) considered the consonants /b/, /l/, /m/ and /n/ and vowels /u/, /o/ and /ɒ/ to be round-sounding, and the consonants /k/, /p/ and /t/ and the vowels /i/, /e/, /ɛ/ and /ʌ/ to be sharp-sounding.

Relying on that, they chose five male and five female names that contained round-sounding consonants and at least one round-sounding vowel. They also chose sharp-sounding male names and sharp-sounding female names with no round-sounding vowels and only sharp-sounding consonants. The participants of their study were undergraduate students at the University of Calgary, Canada. All participants reported English fluency. Participants were asked to assign a given English first name to alien-like character shapes. Each shape was created as a wavy (for the round shape) or jagged (for the sharp shape) outline, which are bouba-like (rounded shapes) and *kiki*-like (jagged shapes). Their experiment showed that there was a relationship between *bouba* with female names and *kiki* with male names through the answers of the participants. In addition, they perceived an association between gender and shape; that is, the association of roundness with femaleness and sharpness with maleness.

Mueller and Stumme (2016) contributed to this field of study by studying the gender differences in names in Twitter. They create a novel name classifier which they call 'NamChart' that is able to label a given name as one of the two genders using only a small set of characteristics extracted from the written word of a name. Regarding bouba-kiki sounds, they used the following characteristics: the number of bouba consonants; mainly voiced consonants /b/, /l/, /m/, and /n/, number of bouba vowels; rounded vowels /u/, /o/, and /ɒ/, number of *kiki* consonants; voiceless stop consonants /k/, /p/ and /t/ and finally number of *kiki* vowels; namely the unrounded vowels /i/, /e/, /ɛ/, and /ʌ/.

Besides the bouba-kiki features used by Sidhu and Paxman (2015), they also added other variables such as number of syllables, number of consonants, and number of vowels, ending character and vowel brightness (front vowels are sometimes referred to as bright vowels because they are perceived as sounding brighter than the back vowels, The more front and high the vowel, the brighter it is (Anderson, 2007).

Barton & Halberstadt (2017) investigated the impact of the linguistic properties of words on the physical characteristics of shapes; they studied the social bouba-kiki effect on the association between names and face shapes. Fifty-seven students at the University of Otago, New Zealand, were asked to match six names to ten rounded and ten angular male faces. The faces were created to have exaggerated round or angular features (e.g., round vs. narrow head, puffy vs. thin lips, etc.). Names, on the other hand, were chosen depending on the back/front vowel contrast and the shape of the speaker’s lips while pronouncing them (rounded –unrounded); names consisted of three round stimuli (Jono, George, and Lou) and three angular stimuli (Pete, Kirk, and Mickey). Results were consistent with the hypothesis of the study; participants match names with round stimuli to the rounded faces and names with angular stimuli with angular faces.

The previous review of literature of bouba-kiki effect is used in this research to check the significance of the bouba-kiki effect on Jordanian first names. The following features have been chosen, relying on previous research, to represent and trace bouba-kiki effect in Jordanian Arabic:

1- The number of *bouba* consonants and vowels, (the voiced consonants /b/, /l/, /m, /n/ and vowels /u/, /uu/).
2- The number of *kiki* consonants and vowels, (the voiceless stop consonants /k/, /t/, /q/, /g/ and vowels /i/, /ii/, /a/, /aa/).

This analysis is discussed in Chapter 4.

2.7.5 Sound Symbolism in Arabic

In this part, I introduce the study of sound symbolism in Arabic, Arabic sound characteristics and sound symbolism in names. Before introducing the previous research on sound symbolism, I provide an overview of some the most well-known linguists in Arabic language history. These linguists' work has affected all later research on the sound system and sound symbolism.

Early Arab linguists thoroughly studied the Arabic sounds and described their features precisely. Al-Farahidi (718–786 CE) is most distinguished for his book *Kitab al-Ayn* '*The Source'* which was the first-ever known dictionary for Arabic language. He is also known for introducing the current diacritics into Arabic script instead of the old system of the series of indistinguishable dots. He also introduced the emphatic mark into the Arabic language.

Sibawayh (760–796 CE) is also among early Arab linguists who influenced the study of the Arabic language sound system. He was called 'the father of Arabic grammar' as he established the consonantal system in classical Arabic and classified the speech sounds into /mahmuus/ and /madʒhuur/. These two terms mean respectively 'whispered, hushed' and 'loudly and clearly uttered' (Al-Nassir 1993, p. 35). He described each sound accurately and classified the Arabic sounds according to the articulators that cooperate to produce these sounds, the vibration of the vocal cords and the manner of articulation.

One of the most famous and influential phoneticians working on Arabic was Ibn Jinni (932–1002 CE) who described each speech sound's place and manner of articulation.

He also differentiated geminated from non-geminated sounds. Elramli & Maiteq (2020, p.52) explained Ibn Jinni’s impact on Arab phonology research, as he introduced segmental and suprasegmental processes such as*: i’lal* (vowelization), *ibdal* (replacement), *idgham* (assimilation), *naql* (transfer) and *hathf* (deletion).

Before introducing the previous research on sound symbolism in Arabic, I introduce the Arabic sound characteristics and investigate the relationship between the articulation of the Arabic sounds and their connotative association. This of Arabic draws on the terminology and common practices of Arabic phonology, and the specialised terminology will be introduced and explained in the following discussion.

2.7.5.1 Arabic Sounds Characteristics

Regarding the classification of Arabic phonemes, ‘consonants are usually differentiated by three main categories, namely position of sound track (i.e. voicing), place of articulation, and way of articulation’ (Achmad, 2019, p.3).

According to Arab linguists (Ibn Aljazzri 2006, Al-Farahidi 1996, Sibawayh 1999, Ibn Jinni1999, Abbas 1998, and Anis 1999), there are 17 **essential/permanent characteristics**, ten are paired or have opposites, and the rest, are unpaired. Based on these Arab linguists, Table 2.13 shows strong, weak and neutral features for each sound.

Table 2.13: Arabic sounds features			
Sound	**Strong feature(s)**	**Weak feature(s)**	**Neutral feature(s)**
/ʔ/	Loudness, strong (plosive)	Lowering, openness	Abstaining
/b/	Loudness, strong (plosive), disturbance	Lowering, openness	Eloquence
/t/	Strong	Lowering, openness, whispering	Abstaining
/θ/	-	Lowering, openness, whispering Looseness	Abstaining
/ʤ/	Loudness, strong, disturbance	Lowering, openness	Abstaining
/ħ/	-	Whispering looseness, lowering, openness	Abstaining
/x/	Elevation	Whispering, looseness, openness	Abstaining
/d/	Loudness, strong, disturbance.	Lowering, openness	Abstaining
/ð/	Loudness	Looseness, lowering, openness	Abstaining
/ɾ/	Loudness, deviation, repetition.	Moderation, lowering, openness	Eloquence
/z/	Loudness, whistling	Looseness, lowering.	Abstaining
/s/	Whistling	Whispering, Looseness, lowering, openness	Abstaining
/ʃ/	Diffusion	Whispering, looseness, lowering, openness	Abstaining
/sˤ/	Elevation, adhesion, whistling	looseness	Abstaining
/dˤ/	Loudness, elevation, adhesion, elongation, strength.	looseness	Abstaining

/tˤ/	Loudness, strength, elevation, adhesion, disturbance.	-	Abstaining
/ðˤ/	Loudness, elevation, adhesion	looseness	Abstaining
/ʕ/	Loudness	Moderation, lowering, openness.	Abstaining
/ɣ/	Loudness, elevation	Looseness, openness.	Abstaining
/f/	-	Whispering, looseness (weakness)	Eloquence
/q/	Loudness, strength (plosive), elevation, disturbance.	openness	Abstaining
/k/	Strength(plosive)	Whispering, lowering, openness.	Abstaining
/l/	Loudness, deviation(drifting)	Moderation, lowering, openness	Eloquence
/m/	Loudness	Moderation, lowering, openness	Eloquence
/n/	Loudness	Moderation, lowering, openness	Eloquence
/h/	-	Whispering, looseness, lowering and openness.	Abstaining
/w/	Loudness	Weakness (looseness), lowering, openness, softness	Abstaining
/j/	Loudness	Weakness (looseness), lowering, openness softness (ease).	abstaining

Generally speaking, the Arabic sounds are classified into weak or strong in terms of their articulation. To better understand weak/strong sound distinction and investigate the relationship between the articulation of the Arabic sounds and connotative association they have, the following section explains the Arabic sound features, including an explanation of what weak or strong sounds are.

i. **Whispering vs. audibility (loudness)**[11]

Whispering means the flow of breath during pronunciation. The following sounds have this characteristic: /f/, /ħ/, /θ/, /h/, /ʃ/, /x/, /sˤ/, /s/, /k/, /t/.

Al-Farahidi (1996) explained that *hams* 'whisper' is the feeling of sound in the mouth without coming from the chest and no loudness**. Audibility or loudness** on the other hand means the vibration of the vocal cords when producing the sounds. Ibn Yaish (1960) says that for *majhuur* consonants, 'the loudness' is entirely dependent on the exit of the sound, and the breath is held from running with the sound (trapped breath). Heselwood & Maghrabi (2015, p.138) explained that the most accurate translation for the term *makhraj* is 'exit' instead of translating it as 'place of articulation'. They agreed with other scholars' translation of the term; they argued that a more fitting translation might be 'exit' or 'egress', which is in fact much closer to the everyday meaning of *makhraj*, particularly in relation to the *majhuur-mahmuus* distinction.

Arab linguist Ibn Jinni (1999, p.77) explained that whispering is a weak characteristic of sounds as the whispered sounds are articulated with ease as the breath flows when pronouncing them, while loudness is a strong characteristic as the articulation of these sounds needs great effort; trapping the flow of breath then the breath is needed to blow to pronounce them.

The *majhuur-mahmuus* distinction is usually used by linguists as an equivalent to the voiced-voiceless distinction, where voiced sounds are considered weaker than voiceless. However, in MSA /tˤ/ and /q/ are realized without voicing during

[11] Heselwood &Maghrabi (2015, p. 132) explained that "The majhur-mahmuus distinction would be straightforwardly parallel to the voiced-voiceless distinction, a distinction the universality of which has been more or less taken for granted by many modern phonologists. All the ten consonants classed as mahmuus are indeed voiceless in MSA and other modern varieties of Arabic, and sixteen of the nineteen-majhur consonants are voiced. However, in MSA ṭā (/ṭ/) and qaaf (/q/) are realized without voicing during the closure phase of their production". Their study reveals that he majhuur-mahmuus distinction is best interpreted as a distinction based on control of airflow by glottal states, with voicing being one such state

the closure phase of their production, and it has often been remarked that glottal stop /ʔ/ cannot be voiced. Heselwood &Maghrabi (2015, p. 171) explained that the *majhuur-mahmuus* distinction is best interpreted as a distinction based on control of airflow by glottal states, with voicing being one such state'.

ii. Strength, moderation and weakness

Strong sounds (or plosives): sounds are produced when the breath cannot pass freely or is compressed and then bursts. Sounds that carry this characteristic are /ʔ/, /ʤ/, /d/, /dˤ/, /q/, /tˤ/, /b/, /k/, /t/.

Moderate: where the sound emerges but does not flow, so that the sound is partially imprisoned and partially running when pronouncing the following sounds /l/, /n/. /ʕ/, /m/, /ɾ/.[12]

Weak sound (loose): a flow of sound during pronunciation. (The breath passes freely). Sounds that carry this feature are all Arabic sounds except strong and moderate sounds.

iii. Elevation vs. lowering

Elevation: Ibn Jinni (1999) defined elevated sounds as those which involve the elevation of the back of the tongue towards the roof of the mouth. The front part of the tongue is concave; the back of the tongue is raised towards the palate. This class includes the emphatics (pharyngealized sounds now), /sˤ, /dˤ/, /ðˤ/, /tˤ/ and the ones produced by the back of the tongue and the uvula /x, q, ɣ/. These sounds are considered strong sounds as they are given a quality of heaviness by elevation of the tongue.

Lowering: Ibn Jinni described these sounds as non-elevated. The lowering or depressing of the back of the tongue away from the roof of the mouth upon the pronunciation of the sound. It includes all sounds other than those of elevation. These sounds are considered weak sounds.

[12] The terms 'flow' and 'imprisoned' are used by the Arab linguists but the closest correspondence in the Western linguistics are 'air flow in the oral an nasal cavity' and 'incomplete closure' respectively.

iv. Openness vs. Adhesion

Openness: it is opening the area between the tongue and the roof of the mouth so that the sound is not trapped between them when the sound is pronounced. These sounds are considered weak sounds.

Adhesion or closeness: refers to the tongue condition inside the mouth during a sound articulation. According to Ibn Jinni and Sibawayh (1999) in pronouncing these sounds, there is a contact between the back of the tongue and the roof of the mouth; these sounds are /sˤ/, /tˤ/, /dˤ/, /ðˤ/. These sounds have the feature of elevation as well. Bani Mustafa (2014, p.97) explained that these sounds are considered strong sounds phonetically hard to produce; however, Sibawayh explained that this feature is not as strong as elongation and whistling.

i. Eloquence vs. abstaining

Eloquence (fluency and purity): refers to the articulation of the sound with utmost ease from the sides of the tongue or lips as if they are slipping away. They are articulated with minimal effort. These sounds are: /f/, /ɾ/, /m/, /n/, /l/, /b/.

Abstaining (prevention): sounds that are pronounced in a heavy manner, a certain amount of effort is required. This is a character of all Arabic sounds except eloquent sounds.

ii. Whistling (sibilant): Sharpness in the sound produced when air passes through a narrow opening. According to Sibawayh (1999), this is a quality of the letters /s/, /sˤ/, /z/, /ʃ/. Bani Mustafa (2014, p.96) explained that 'Sibawayh considers these sounds strong due to the loudness and clearness of their production and the strong friction they produce'.

iii. Disturbance (movement): this is a feature of sounds that are pronounced with an echoing or bouncing sound. Rasheed (2013, p.98) explained that Arab grammarians argued that this is a feature of the voiced plosives /q/, /tˤ/, /b/, /ʤ/, /d/, /k/. She argued that the /q/ and /tˤ/ sounds are now classified as voiced sounds, but old Arab grammarian considered them voiceless sounds, and the sound /dʒ/ is not plosive today. Still, it was considered a plosive sound by classic Arab grammarians. Rasheed (2013) added that the articulation of these sounds needs great effort; plosives are produced with complete compression of the air in the mouth, and as these sounds are voiced at the same time, they need the breath to blow, the closure prevents the air to be blown, so these sounds are pronounced followed by short vowel (diacritic).

iv. **Ease (softness):** produced by narrowing but not blocking the vocal tract. The sounds that have this feature are pronounced without exertion or difficulty as they require slightly narrowing of the vocal tract, while still allowing a smooth flow of air. This is a quality of /j/ and /w/. They are produced with less obstruction of airflow and do not require additional effort to bring the vocal tract to complete blockage.

v. **Deviation: (drifting):** it is defined as the drifting of the sound away from its exit until it connects to a different exit. Sibawayh (1999) explained that the deviation or drifting occurs when there is a partial obstruction to the air flow that makes the air pass between the sides of the tongue and the hard palate. By this definition, this characteristic is exclusively given to the lateral sound /l/.

vi. **Rolled (repetition):** Crystal (2008, p.419) defined the rolled consonants as ‘the sounds produced as a result of sequential fast striking by a flexible organ of speech such as the tongue tip or the uvula’. Rasheed (2013, p.110) explained that: ‘Arabic /ɾ/ is produced by succeeding the striking of the tongue tip against the alveolar ridge quickly. Sibawyeh (1999, p. 250) added that ‘when pronouncing the sound /r/, it sounds as a doubled sound (i.e. geminated)’.

vii. **Diffusion (spreading):** the spreading of air throughout the mouth during the pronunciation of the sound, allowing the sound to spread greatly over the mouth. This is a quality of /ʃ/ for Sibawayh (1999). This feature is considered a strong feature.

viii. **Elongation (Lengthening)**: Sibawayh (1999, p.573) defined it as 'the extension of sound over the entire edge of the tongue from front to back'. This is a quality of /dˤ/, and is considered a strong feature.

Although some features are classified as strong, weak or moderate, that can't be considered as a crucial point in classifying a single sound as strong or weak or moderate. Sibawayh (1999) considered sounds with the following features: elongation, repetition, diffusion, sounds /w/, /j/ and /ʔ/ to have equal strength. On the other hand, he argued that although adhesion, loudness and plosives are considered strong features, they are not crucial in defining a sound as strong or not.

Arabeed (2014) and Bani Mustafa (2014) also agreed that a sound is considered weak or strong, relying on the majority of the features that a sound has. Arabeed (2014) added that a plosive sound that is loud, closed and elevated is considered among the strongest sounds. The /f/ sound is considered the weakest sound as it does not have any strong characteristics while it has the following weak characteristics: whispering, looseness, openness and lowering. /tˤ/ sound, on the other hand, is considered the strongest sound as it has the following strong characteristics: loudness, plosive, elevation, adhesion and disturbance.

Arabeed (2011) classified sound characteristics into strong, weak and moderate as follows:

1- Strong characteristics: loudness, plosives, adhesion, whistling, disturbance, repetition, diffusion, deviation, nasality and elevation.
2- Weak characteristics: softness, openness, whisper, looseness.
3- Moderate (neither strong nor weak) characteristics: eloquence, abstaining and moderation.

Relying on the previous classification, Arabeed (2014, p.462) classified Arabic sounds into five categories:

1- The strongest sounds: /tˤ/, /dˤ/, /q/, /ðˤ/

2- Strong sounds: /ʤ/, /d/, /sˤ/, /ɾ/, /b/

3- Medium strength sounds, moderate,: /l/, /m/, /n/, /ɣ/, /ʔ/

4- Weak sounds: /t/, /x/,/ð, /s/, /ʃ/,/ʕ/, /k/, /z/,/w/,/j/

5- The weakest sounds: /ħ/, /h/, /f/, /θ/

Different classifications can be found that may slightly differ, that include some of the controversial sounds. The sound /ʕ/, for example, is considered one of the sounds that appears in words that connote strong meaning. Najjar (2010) explained that the sound /ʕ/ can evoke meanings of weakness and sadness but can also express meanings of strength and aggressiveness due to the loudness characteristics in this sound. Muftah (1986) also agreed that sounds /ʕ/ can carry the meaning of superiority and imminence. Moreover, sounds that carry the feature of adhesion (closed sounds) that are considered strong sounds can still differ in their strength. An example can be found in what Najjar (2010) argued about that pharyngeal /ʕ/ and glottal /ʔ/ which are close in term of place of articulation. However, /ʔ/ is stronger than the /ʕ/ as /ʔ/ is a plosive sound while /ʕ/ is a fricative.

Najjar (2010) explained that plosive sounds with features of loudness and elevation convey meanings of strength. On the other hand, sounds with the features of whispering, softness and disturbance convey meanings of weakness. Strength and weakness of sounds are combined in generally additive way, so words with a majority of strong sounds can be thought of as words that connote strong meaning.

Relying on Ibn Jinni (1999), Anis (1999), Abbas (1998), Jabal (2008), Najjar (2010), Achmad (2019) Arabeed (2010), a list of weak and strong sounds has been created as follows in Table 2.14:

Table 2.14: Arabic weak and strong sounds

Strong sounds	Weak sounds
/ʤ/	/ħ/
/q/	/θ/
/d/	/k/
/b/	/h/
/ɾ/	/s/
/sˤ/	/ʃ/
/tˤ/	/t/
/dˤ/	/f/
/ðˤ/	/z/
	/w/
	/j/
	/ð/
	/ʕ/

Relying on this classification and building on sound symbolism research, I expect that strong sounds are used more in male names while weak sounds are used more in female names. This will be tested in Chapter 4 when analysing the sound symbolism impact in Jordanian first names.

It is worth noting that the classification of sounds into strong or weak is done based on the previous work of Arab Linguists not on the English sonority hierarchy. Sonority is used in English ‘to refer to specific qualities of sounds, usually referred to as ‘loud’, ‘deep’, or ‘resonant’’ (Cahill, 2019, p. 79). Cahill (2019) explained that the sonority hierarchy is as follows:

> Vowels > Glide > Approximants > Nasal > Voiced fricative > Voiceless Fricative > Voiced Affricate > Voiceless Affricate > Voiced Plosives > Voiceless Plosives.

Sapir (1929), Newman (1994) and Ohala (1994) justified the sound symbolic association of certain sounds with particular meaning in regards of frequency of vocalic resonance and other factors such as the articulator position and size of the oral cavity. Although the term sonority is not used to justify this sound symbolic association, the distinction is almost sonority based.

As explained in section 2.3.5.1, Arabic sounds acquire their symbolic association because of their place and manner of articulation. However, this association is also very closely related to sonority. For example, plosives are considered strong sounds in Arabic and approximants (soft sounds) are considered weak sounds.

2.7.5.2 Previous Research on Sound Symbolism in Arabic

The previously mentioned linguists Al-Farahidi (1996), Sibawayh (1999; and Ibn Jinni (1999), among other Arab linguists and linguists working on the Arabic language, argue that there is an intimate relationship between sounds and meanings.

Ibn Jenni stated that some sounds are used to reflect the properties of events. He argued that sounds that are known as heavy (plosive) sounds in Arabic are used in words that carry a meaning of heaviness or words that refer to hard activities. In contrast, sonorants are used in words that carry a meaning of softness or words refer to light activities (Ibn Jinni, 1999, p. 165). Al-Tha'labi (1989) asserted that Arabic sounds have special suggestive impact; if they do not reflect the exact meaning, they imply the meaning. One of the examples Ibn Jinni gave was the use of /q/ and /x/ in words like /qad^{ʕ}ama/ and /xad^{ʕ}ama/. While both words, semantically, mean ‘to chew’, the first word /qad^{ʕ}ama/ is used to describe chewing hard food, and the second word /xadama /is used to describe chewing soft food. Ibn Jinni explained that the difference in the choice of sounds is due to the different properties each sound has. The /x/ sound is a soft sound, while the sound /q/ is a hard sound (Ibn Jinni, 1999, p.157).

Another example is between /s/ and /s^{ʕ}/ in words like /saʕada/ and /s^{ʕ}aʕada/. The difference between these two words is their first phonemes /s/ and /s^{ʕ}/; both words generally have a similar element of meaning ‘ascendance’. The two phonemes have the same primary place and manner of articulation, as they are dental alveolar fricatives. However, /sˤ/ is used in concrete context, including physical things while /s/ is usually used in an abstract context. Achmad (2019) explained that the articulation of the phoneme /sˤ/ is phonetically harder than the articulation of phoneme /s/. The phoneme /sˤ/ is a closed phoneme; there is a contact between the back of the tongue and the roof of the mouth when this sound is produced, whereas phoneme /s/ is an open phoneme; the area between the tongue and the roof of the mouth is open so the sound is more easily produced. He added that concrete meaning is stronger than abstract meaning that is why /sˤ/ that is harder to articulate is used with concrete rather than abstract meaning.

Achmad (2019, p. 7) gave another case that shows how the choice of sounds is affected by the meanings they carry. Both of the words /fataħ/ and /fadˤaħ/ carry a similar semantic meaning of ‘disclosure’ and share the same sounds except their middle phonemes, which are /t/ in the first word and /dˤ/ in the second word. Both have the same place and manner of articulation: dental alveolar stops. However, the phoneme /t/ is an open phoneme, whereas phoneme /dˤ/ is a closed phoneme. The phoneme /t/ is originally used in a positive context, such as opening something good. On the other hand, the phoneme /dˤ/ is usually used in the context of opening something in a negative manner. The articulation of phoneme /dˤ/ is also phonetically harder than the articulation of phoneme /t/. That is why the word /fataħ/ is used in a positive context, whereas the word /fadˤaħ/, in general, is used in negative contexts because the exposure of something bad or evil would usually give harder and more serious impact rather than the exposure of something good.

In another study, Iqbal (2010) observed more examples that show the impact of certain sounds on the meaning of the words and how that is related to the phonetic features of these sounds. Sound /f/, which is a weak sound, implies the weakness in the word /xaff/, which means being light. Another example is the word /ɣilaaðˤ/, which has the heavy intense sounds /ɣ/ and /ðˤ/, which connotes the meaning of being rugged, tough, or thick. The word /naddaħ/, which means the flow of water, has a weak sound /ħ/,that flows in the mouth easily is consistent with the meaning of the sounds gives to the word.

2.8 Phonaesthetics of Names

The last part of this chapter is focused on the study of phonaesthetics of names. It begins with an overview of the term phonaesthetics and previous literature on the study of phonaesthetics. I then introduce name-related literature in the field. To narrow down the literature to the topic of this study, I present the study of phonaesthetic in Arabic language in general and in Jordanian names in particular.

2.8.1 Introduction and Review of Literature

Firth developed the concept of phonaesthetics in 1951, which he defined in 'Modes of Meaning' as 'an association of social and personal attitude in recurrent contexts of the situation with certain phonological features' (Firth, 1951, p.194). He explained that phonaesthetics is the study of phonaesthesia that is defined as 'the study of the expressiveness of sounds, particularly those sounds which are felt to be appropriate to the meaning of their lexemes'. (Wales, 2011, p. 316). Firth used the term *phonaesthemes* to refer to sounds or clusters that carry the same meaning in different words. The onset cluster /fl/, for example, is used to suggest sudden movement in words like *flail*, *flap*, *flare*, *flash*, *flush*, *flick*, *fling*, *flop* and *flounce* and the rhyme /æʃ/ in the words: *bash*, *crash*, *dash*, *flash*, *smash*, and *thrash* suggests violent impact or abrupt movement. Shisler (1997, p. 16) defined phonaesthetics relying on Firth studies, as he explained that the term phonaesthetics, also known as conventional sound symbolism, is: 'the use of sound symbolic elements called phonaesthemes,' adding that 'A phonaesthemes is a sound, sound cluster, or sound type that is directly associated with a meaning.'

Ciccotosto (1991, p. 87) explained that phonaesthetics assigns an emotional nature to sounds. He added that 'good or bad, hot or cold, fast or slow, dangerous or safe are varied affective connotations which types of sounds can acquire in an orderly fashion within a culture.' He provided some examples to clarify his definition as the /æʃ/ in words as *dash*, *gash*, *clash* associated with violence and the low mid back unrounded vowels /ʌ/ in words like *mud*, *dud*, *cud* associated with unspecified heaviness and dullness. His definition is also relative to Firth and Shisler's definition of phonaesthetics.

Although Firth was first to come up with the term phonaesthetics, Firth's definition of phonaesthetics as the study of phonaesthesia is not how it is used by many scholars. Willet (2015) explained that phonaesthemes and phonaesthetics are both forms of sound symbolism. However, they are not the same. He added that: 'although some phonaesthemes may be perceived as 'beautiful' sounds by individuals or cultures, this need not be the case. It is largely irrelevant whether a phonaestheme is perceived to be an 'ugly' or 'beautiful' sound; what matters are the meanings with which the phonetic structure recurs' (Willet, 2015, p. 46). According to Willet, the term phonaesthetics that refers to the idea of aesthetically pleasing linguistic sounds or 'euphony', was first seen in the correspondence of J.R.R. Tolkien in a letter to a correspondent.

The letter is dated to 1954 in which Tolkien explained how he used and modified the phonetic structure of language to create new words for Elvish Language in 'The Lord of the Rings' that can be considered pleasant. Tolkien explained the Elvish language he composed intended to be: '(a) of a European kind in style and structure and (b) to be especially pleasant'. He explained that the first condition was easy to meet but the latter was difficult because of individuals' personal predilections. He recalled how the Quenya dialect of Elvish language 'might be said to be composed on a Latin basis with two other (main) ingredients that happen to give me 'phonaesthetic' pleasure: Finnish and Greek' (Carpenter and Tolkien, 1981, p. 194).

In his essay 'English and Welsh' ,which he delivered in the 1955 O'Donnell Lecture in Oxford, Tolkien mentioned the compound noun *cellar door* as an example of English words that are especially beautiful in term of sound (phonaesthetic) with no regard to their meaning. He explained that 'most English-speaking people, for instance, will admit that *cellar-door* is 'beautiful', especially if dissociated from its sense (and from its spelling). More beautiful than, say, *sky*, and far more beautiful than *beautiful*.' (Tolkien, 1997, p. 191). Besides Tolkien, other writers such as Edgar Allen Poe and Dorothy Parker have all considered *cellar-door* as being among the most beautiful words in the English language

Other scholars credited the use of *cellar door* as a beautiful word regardless its meaning to Cyrus Lauron Hooper (1903) in his novel 'Gee-Boy'. Hooper's narrator wrote of one of the characters:

> 'He even grew to like sounds unassociated with their meaning, and once made a list of the words he loved most, as *doubloon, squadron, thatch, fanfare* (he never did know the meaning of this one)…… He was laughed at by a friend, but logic was his as well as sentiment; an Italian savant maintained that the most beautiful combination of English sounds was *cellar-door*; no association of ideas here to help out! Sensuous impression merely! The cellar-door is purely American.' (Hooper, 1903, p. 43-44).

Nunberg (2014) suggested that the phenomenon might have arisen from Philip Wingate and Henry W. Petrie's 1894 hit song 'I Don't Want to Play in Your Yard', which contained the lyric 'You'll be sorry when you see me sliding down our cellar door'. Following the song's success, 'slide down my cellar door' became a popular catchphrase to mean engaging innocent friendship.

As a matter of fact, most of the scholarly work in phonaesthetics is established by David Crystal. Crystal (1995a, p. 8) defined phonaesthetics as the study of 'the expressive properties of sound'. He studied why people consider some words to be more beautiful in terms of sound rather than meaning. In a newspaper, Crystal described a poll of British readers' favourite words by the Sunday Times in 1980. It was found that *Melody* and *velvet* were in first and second place, while there was a tie in the third place between *gossamer* and *crystal*. As a response to this poll, John Kitching wrote a poem 'Sunday Words', that included most of the high-ranking words of the Sunday Times poll. Vowels and consonants of 81 words listed in the poem were analysed by Crystal to find out what makes these words more attractive than others and what vowels and consonants are involved in the process of making these words more pleasant than others. Crystal (1995b) explained that phonologically pleasant words can be built up of three syllables, with the first syllable stressed. New words are preferred to have high-frequency consonants. Crystal explained that 73% of all the consonants in the poem consist of these eight consonants /l/ and /m/ as most preferred, with /s/, /k/, /r/, /t/, /d/, and /n/ coming in very close. He shows that the most common are frictionless continuants, followed by plosives, fricatives and affricates. He also found that among 172 vowels, the unstressed vowel /ə/ is the most common; he explained that this shows that words of more than one syllable are preferred. Crystal added that short vowels are preferable and also those that move from mid towards high and from the front towards the back. This analysis by Crystal showed that Kitching's poetic intuition about what is pleasing to native English speakers is about 80% accurate compared with the poll. It is also preferable for these words to have different manners of articulation, at least three. Crystal (1995b, p. 42) stated that 'a word apparently sounds prettier if the manner of consonantal articulation changes as the syllable passes by'.

2.8.2 Phonaesthetics and Names

Studying the influence of phonaesthetics on names has attracted many scholars' attention. Crystal (1995b) pointed out that it is impossible to separate sound and meaning totally. According to Crystal, a writer who defines words like *peril* as a beautiful word is dissociating meaning and sound radically. He remarked 'on the whole, pleasant-sounding words have positive and desirable meaning or represent favoured semantic domains, such as birds or flowers'. However, Klerk & Bosch (1997) who studied the sound patterns of nicknames, pointed out that such association between sound and meaning does not apply to names. They explained that 'English names are a special subset of the lexicon which do allow one to separate sound from meaning to a certain extent since as proper nouns in English, names are terms of reference, generally lacking the signification or meaning so typical of verbs, nouns and adjectives; indeed, to the vast majority of users they are completely semantically opaque' (Klerk & Bosch, 1997, p. 4).

Klerk & Bosch (1997) explained how names are different from other words; they stated that coining new names is something people are somehow licensed to do unlike the stable bulk of the lexicon. Moreover, comparing names to other lexical item, 'psycholinguists found that the way our minds classify names seem to be different from our storage of other words, and they are stored in a separate area of the brain, and in aphasic patients they are either lost in isolation or retained when other lexical items are lost' (Klerk & Bosch,1997, p. 4).

Studying the influence of phonaesthetics on nicknames Klerk & Bosch (1997) found similar results to Crystal phonaesthetic sounds (1995a) when they analysed positive nicknames. All the eight consonants which Crystal reported as having a high frequency in phonaesthetic words in English occur in the top twelve most frequently occurring consonants in positive nicknames (with slight differences in ranking). Similar results in a study built on Crystal's work on pleasant sounds in words, in general, can also be found in Allerton's study on proper names (1987). Allerton (1987) explained that some names seem prettier because of their sounds; names like *Valerie* or *Laurie* may well please the ear of English speakers because of their liquid consonants and open syllables. Allerton (1987) argued that the aesthetic taste in personal names influences the process of naming as well as the change in personal names.

Nordquist (2019) published an article about tracing the influence of phonaesthetics on adopted names of actors and nicknames. Nordquist explained that phonaesthetics plays an important role in choosing new names for actors who did not like their original names. He stated that men usually tend to avoid gentle continuant sounds such as /m/ and /l/ and prefer names with hard-sounding plosives such as /k/ and /g/. Some of the examples he pointed to support his assumption are: *Maurice Mickle white*, who changed his name to became *Michael Caine* and *Alexander Archibald Leach* who changed his name to *Cary Grant*. On the other hand, he states that women go the other way; *Dorothy Kaumeyer* changed her name to *Dorothy Lamour,* and *Hedwig Kiesler* changed her name to *Hedy Lamarr*.

Smith (1998) argued that people's names that contain either back vowel sounds or begin with /sl/ are considered less positive than others names. He examined U.S. presidential election outcomes and studied the names of presidential candidates from 1824 to 1992. He explained that undecided voters' votes might be influenced by candidates' names when they do not base their decision on party loyalty, for example. He hypothesized that certain combinations of vowels and consonants might affect the general appeal of a name positively or negatively. The selection and weighting of the individual sound features relied on what he called the comfort index. It combined three phonetic dimensions: vowel features, consonant features, and rhythm. Rhythm includes the number of syllables and their pattern of emphasis. Each of which contained several subcategories. He then analysed the family names of presidential candidates using the comfort index, assuming that name with the highest comfort index would be the winner. His results showed that of the 42 elections, the candidate with the highest comfort index won the popular vote in 35 of them (83%); for example, candidates whose family names contained negative sound (such as *sl*, *fl* or *u*) had fewer chances to win the election.

2.8.3 Phonaesthetics in Arabic Language

This section focuses on the term phonaesthetic in Arabic. Al-Farahidi (1996) was the first Arabic linguist who discussed the importance of the place of articulation on creating the euphony of words. An example he stated was that the /h/ and /ħ/ sound are not preferred in one word due to the close place of articulation of these two sounds. Al-Rumani (1976), relying on Al-Farahidi study, asserted that euphony could be found in words in which sounds have different places of articulation: they should not be close or very distant. Ibn Jinni (1999) also reported the importance of the place of articulation in creating euphony by stating that it is not preferable to have two sounds close in terms of place of articulation in one word. He added that the ugliest-sounding combination of sounds is when having pharyngeal sounds following each other, as this makes it difficult for the speaker to pronounce them.

Yasuuf (1994) in his study of the aesthetics of Quranic vocabularies emphasized the importance of the place of articulation when identifying phonaesthetics of words. He stated that sounds that are close in place of articulation are not preferred to occur in one syllable not even in one word, as this makes it difficult to pronounce the word, which results in cacophony. Yasuuf explained that the words /muzn/ and /buʕaaq/, for example, both carry the same meaning ‘rain clouds’, the first is preferred and considered more beautiful as the sounds seem more musical. He justified that as it consists of 3 consonants; labial nasal /m/, the alveolar fricative /z/ and the alveolar nasal /n/ while the /buʕaaq/ has three consonants; the labial stop /b/, pharyngeal fricative /ʕ/ and uvular stop /q/, the last two consonants are close in terms of place of articulation which make the word less pretty and more difficult to pronounce. Yasuuf (1994) also stated that the more vowels the word contains, the easier it is to pronounce and thus more musical.

Abbas (1998), in his study about Arabic sounds, stated that place of articulation plays a significant role in the frequency of some sounds more than other sounds. He explained that the emphatic interdental fricative /ðˤ/ is the least used sound in Arabic, as it cannot be used easily and smoothly with other sounds. He also added that the pharyngeal fricative /ʕ/ is considered the most difficult sound to pronounce. Abbas (1998) also asserted that /h/ carries a negative connotation at the initial position, so it is not frequently used initially, /ɣ/ and /x/ carry negative connotation, so they are not preferred in Arabic words.

Besides considering the importance of the place of articulation in creating pleasant sounding words, other linguists asserted the influence of the frequency of sounds in Arabic words. Al-Nassir (1971, p. 342) reported that the most frequent sound in Arabic is /l/ followed by /n/ and then /m/. On the other hand, he explained that the least common are /ðˤ/ and /ɣ/. The high frequency of /l/, /n/ and /m/ is justified by Abd Al-Rhaman (1998) as these sounds are similar to vowels in terms of production and thus easier to pronounce than other consonants.

2.8.4 Phonaesthetics in Jordanian Names

In this section, I review previous research of the phonaesthetics of Jordanian names, although prior research in this topic is very sparse. I then set the list of sounds that can be considered as phonaesthetically pleasant in Jordanian names. This list is used in Chapter 4 as a primary reference for analysing the phonaesthetics of Jordanian names.

Zuraiq (1999, p. 3) traced the effect of phonaesthetic features on personal names. He emphasised the importance of the place of articulation in creating pleasant names. Consonants that are close in term of place of articulation are not preferred to occur in the same syllable not even in one word. He also argued that the balance between vowels and consonants affect word euphony; he added that ‘Arabic names are one field where harmony between vowels and consonants play a significant role in their euphony’ (p.38). Zawaideh (2006), in his diachronic study of Jordanian name, relied on previous studies on the phonaesthetics of names (including Allerton 1987, Crystal 1993, Zuraiq 1999 and others), and summarized the properties of positive phonaesthetics structure of Arabic names as follows:

1. It contains the sounds /w/, /l/, /ɾ/, and /m/.
2. It ends with an open syllable, i.e. ends with a vowel.
3. The place of articulation changes throughout the articulation of the word.
4. The manner of articulation changes throughout the articulation of the word.
5. The number of vowels is equal to, or surpasses, the total number of consonants.
6. The length of the word is relatively short.
7. Does not contain the sounds palatal affricate /ʤ /, pharyngeal/ ʕ/, and emphatic interdental fricative /ðˤ/.

Zawaideh (2006) stated that the more of these properties a name contains, the more phonaesthetically pleasing it is. Zawaideh relied on studies on phonaesthetics of English in setting some of these criteria. The first criterion stated that a word contains one or more of /w/, /l/, /ɾ/, and /m/ sounds make it more phonaesthetically pleasant. He relied on his assumption on Crystal’s study of the high frequency, phonologically pleasant sounds in phonaesthetic words in English. However, this can’t be said to be true for Arabic words as the most common, most preferred sounds are /l/, /m/, /n/, /j/ based on Intellyze software analysis of Arabic sounds frequency.[13] Therefore, these sounds /l/, /m/, /n/, /j/ are considered, in this study, as most preferred sounds in names.

Regarding the seventh criterion, other sounds can be added as non-preferred sounds. Pharyngeal fricative /ʕ/ is considered the most difficult sound to pronounce, emphatic interdental fricative /ðˤ/ is the least used sound in Arabic as it cannot be used easily and smoothly with other sounds, while /x/ and /ɣ/ carry a negative connotation. Abbas (1998) also added that glottal fricative /h/ has a negative connotation if it occurs word-

[13] *Derasah ann Tahleel Tarradod AlHoroof AlArabyyah.*http://www.intellaren.com/articles/ar/a-study-of-arabic-letter-frequency-analysis

initially. To the best of my knowledge, no previous study in Arabic linguistics considers palatal affricate /ʤ/ as an ill-favoured sound. This study will not consider /ʤ/ sound as ill-favoured sounds. Abbas (1998) explained that velar fricative /x/, pharyngeal /ʕ/, and /ðˤ/ are difficult to pronounce. He also added that /h/ carries a negative connotation at the initial position, so it is not frequently used initially. Likewise, /ɣ/ and /x/ carry negative connotations so they are not preferred in Arabic words. Zawaideh's Criterion 7 will be changed into 'names that don't contain /ʕ/, /ðˤ/, /x /, /ɣ/ or /h/ name initially'. Relying on the previous analysis on research on Arabic language sound properties, words (name, particularly) are said to have positive phonaesthetic structure, i.e. are considered aesthetically pleasant if they have the following features:

1- Names have the following sounds: /l/, /m/, /n/, /j/.
2- Ends with an open syllable, i.e. ends with a vowel.
3- The number of vowels is equal to, or surpasses, the total number of the consonants
4- The length of the word is relatively short.
5- Doesn't contain /ʕ/, /ðˤ/, /x/, /ɣ/ or /h/ name initially
6- The place of articulation changes throughout the articulation of the word.
7- The manner of articulation changes throughout the articulation of the word

The more of these properties a name contains the more phonaesthetically desirable it is.

2.9 Conclusions

This chapter has presented the definitions and terminologies and reviewed the most relevant literature to the present study. It has been revealed that the research on first name phonology, sound symbolism and phonaesthetic of names has not received much attention in Arabic language in general and Jordanian Arabic in particular.

Following the review of related literature, I outlined the essential elements that will be applied in the analysis in the following chapters and set the features used to analyse the first names in terms of sound patterns, sound symbolism, and bouba-kiki effects and phonaesthetically pleasant sounds.

Phonological analysis of names includes name beginning and ending sounds, type of syllables and length of names. Phonaesthetically, names that have more of the properties listed above are considered more pleasant. Finally, building on the review literature, sound symbolism impact is analysed in terms of:

1- Number of *bouba* consonants and vowels (the voiced consonants /b/, /l/, /m/ and vowels /n/, /u/, /uu/).

2- Number of *kiki* consonants and vowels (the voiceless stop consonants /k/, /t/, /q/, /g/ and vowels /i/, /ii/, /a/, /aa/).

3- Strong/weak sound contrast and front/back vowel contrast.

Chapter 3
The Phonology of Jordanian Arabic

3.1 Introduction

In this chapter, I provide a brief description of the phonology of MSA, the phonology of JA, followed by a distinction between the phonology of JA and English. Jordanian Arabic is loosely used to refer to the rural dialect in this study. This chapter's primary goal is to provide an overview of essential features and relevant topics of JA phonology that will help in discussing the study data presented in Chapters 4 and 5.

English phonemic inventory is presented in this chapter as it is used in the phonological analysis of the adaptation of English names into JA in Chapter 5.

Data has been adapted from Al-Sughayer (1990) and AbuAbbas (2003). Regarding the English language data, Received Pronunciation (RP) is the source of data in this study.

3.2 The Phonology of Arabic

Arabic, which is one of the Semitic languages, is the official language and the language of science, education, press, literature and religious ceremony of twenty-two countries: Algeria, Tunisia, Morocco, Libya, Somalia, Sudan, Mauritania, Comoros, Djibouti, Egypt, Iraq, Jordan, Lebanon, Syria Palestine, Saudi Arabia, Kuwait, Oman, Bahrain, Qatar, United Arab Emirates (UAE) and Yemen. It is also the language of Arab citizens residing in Israel. In addition, Arabic is one of the United Nations official languages, along with English, French, Spanish, Russian, and Chinese (Abdel-Rahman, 2016).

Arabic has three main linguistic varieties: Classical Arabic, Modern Standard Arabic, and Colloquial Arabic. The first variety, Classical Arabic, refers to the variety used in the Arabian Peninsula during the pre-Islamic period; it is the language of the Holy Quran. The second variety is Modern Standard Arabic. It is used as the formal discourse of speaking and writing in the Arab world as well as education. The third variety is Colloquial Arabic, which refers to different Arabic dialects that are spoken in different regions of the Arab world.

Modern Standard Arabic (MSA) is not used in everyday speech and conversation in Arab speaking countries. People of each of the Arab countries use their dialect of Arabic, e.g. Jordanian Arabic, Egyptian Arabic, Syrian Arabic, etc. However, each of the Arab communities understands a great number of other dialects, including MSA.

Al-Masri (2009, p.6) added ‘Within each country, there are distinct sub-dialects. Differences between these sub-dialects are more often than not related to dissimilarity in the consonantal rather than the vocalic inventory’.

3.2.1 Consonants in Modern Standard Arabic (MSA)

MSA has 28 consonantal phonemes. According to Watson (2002), these consonants fall into nine major places of articulation: labial, labio-dental, inter-dental, dental, alveolar, palatal, velar, uvular, pharyngeal, and glottal. Regarding the manner of articulations, consonantal phonemes can be classified as six stops /b, t, d, k, q, ʔ/, two emphatic stops (tˤ, dˤ) two nasals (m, n), eleven fricatives /f, θ, ð, s, z, ʃ, x, ɣ, ħ, ʕ, h/, two emphatic fricatives /ðˤ, sˤ/, one affricate (ʤ), one lateral (l), one flap (ɾ), and two glides (j, w). Table 3.1 shows the consonants in MSA.

Table 3.1: Consonants in MSA

	Labial	Labio-dental	Interdental	Dental	Alveolar	Palatal	Velar	Uvular	Pharyngeal	Glottal
Stop	b			t d			k	q		ʔ
Emphatic stop				tˤ dˤ						
Fricative		f	θ ð		s z	ʃ		x ɣ	ħ ʕ	h
Empathic fricative			ðˤ		sˤ					
Affricate						ʤ				
Nasal	m				n					
Lateral					l					
Flap					ɾ					
Glide	w					j				

3.2.2 Emphatic Sounds in Arabic

Emphasis is one of the phonetic phenomena that attract the attention of linguists of Semitic languages such as Arabic, Hebrew, Aramaic and Ethiopic Ge'ez.

Emphasis applies to consonants produced with a secondary articulation involving the constriction of the upper pharynx. Emphasis was previously described as velarization which means the raising of the dorsum towards the soft palate. Later research (Al-Ani, 1970) suggested that emphatic sounds should be classified as pharyngealized rather than velarized as the oral emphatics are marked by constriction in the upper pharynx and the soft palate is not involved in the production of emphasis.

In MSA, there are four emphatic sounds which are: /sˤ/ (voiceless alveolar emphatic fricative), /dˤ/ (voiced dental emphatic stop), /tˤ/ (voiceless dental empathic stop) and /ðˤ/ (voiced interdental emphatic fricative). As shown in Table 3.2, all the emphatic phonemes have non-emphatic corresponding phonemes; the non emphatic corresponding phonemes for the empathic phonemes, /sˤ/, /ðˤ/, /dˤ/, /tˤ/ are /s/, /ð/,/d/ and /t/ respectively.

Table 3.2: Arabic emphatic sounds and their non-emphatic counterparts

Emphatic sound	Non emphatic counterpart
/dˤ/	/d/
/sˤ/	/s/
/tˤ/	/t/
/ðˤ/	/ð/

3.2.3 Vowels in MSA

There are three short vowels in Arabic (Al-Ani 1970): /i /, /u /, and /a/, and their long counterparts, /ii/, /uu/, and /aa/. The short vowels /i/, /u/, and /a/ are indicated in writing by the diacritics *kasrah*, *dammah,* and *fatħa.* Arabic vowels may be categorized into three types depending on the length: short vowels, long or full vowels and diphthongs.

Long vowels contrast with the corresponding short vowels in respect to length. Diphthongs show a change in quality within a single syllable. There are only two diphthongs in Arabic which are: /aw/ and /aj/.[14]

3.2.4 Syllable Structure in MSA

There are five main syllable patterns in Arabic (Al-Ani 1970). They are shown in Table 3.3.

Table 3.3: Syllable patterns in MSA

Syllable type	**Example**	**Gloss**
CV	/fi/	*in*
CVC	/sin/	*tooth*
CVV	/maa/	*not*
CVVC	/baab/	*door*
CVCC	/nahr/	*river*

The CV pattern is the most common while the CVVC is the least common (Al-Ani 1970), and Arabic syllables can be classified as short or long. CV is the short syllable, and the rest are long. Syllables can also be classified as closed or open. CVC, CVVC and CVCC are closed syllable patterns, as they end in consonants, while CV and CVV patterns are open syllables as they end with a vowel (Al-Ani, 1970).

The internal structure of Arabic syllables can be represented in terms of binary branching tree diagrams. A syllable can be divided into onset and rhyme. The rhyme then is divided into nucleus and coda. Figure 3.1 shows the internal structure of the main syllables of MSA.

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[14] Western linguists use /aʊ/ and /ai/

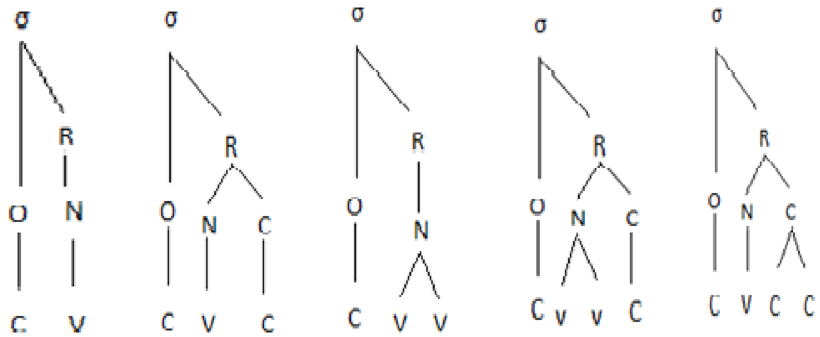

Figure 2.1: Internal structure of MSA syllables Adapted from AbuAbbas (2003)

The syllable structure in MSA shows the following: first, the onset is an obligatory component of the syllable. Any syllable must begin with a consonant, so vowel-initial syllables are not permitted in MSA. Second, the onset consists of only one consonant. Third, consonant clusters within a syllable are not allowed except phrase finally before a pause (Abu-Salim 1982; Abu-Abbas 2003).

It is also worth mentioning that MSA is a quantity sensitive language that distinguishes light from heavy syllables. The distinction between light and heavy syllables is best explained by reference to Moraic Theory (McCarthy & Prince 1986; Hayes 1989). A light rhyme of a syllable consists of a short vowel, while the heavy rhyme of a syllable consists of either VV or VC or Super heavy VVC or VCC word finally (Al-Sughayer, 1990).

On the distinction between heavy and light syllables in MSA, AbuAbbas (2003) explained that a syllable with one mora is a light syllable while a heavy syllable has two moras and while the onset is never moraic as it does not contribute weight, the syllable nucleus is moraic as each vowel in the nucleus contributes a mora. He also added that:

> ‘Consonants in coda position can be moraic and thus part of a heavy syllable, and they can be nonmoraic and thus count as light syllables. The behaviour of coda consonants is seen as language-specific. In both MSA and JA, a CVC syllable will be seen as one containing two moras except in phrase final position where the last consonant is extra syllabic’ (AbuAbbas, 2003, p.6).

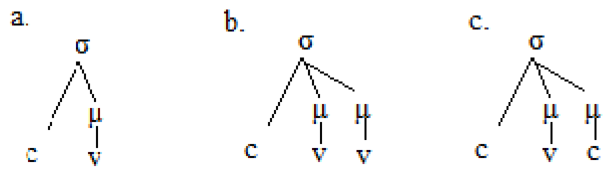

Figure 3.2: Moraic representation of syllable structure in MSA adapted from AbuAbbas (2003)

Figure 3.2, shows (a) a light syllable (b) a heavy syllable and (c) a heavy syllable except in the word final position, as the last consonant is considered extra syllabic word finally.

3.2.5 Geminated Consonants in MSA

Gemination involves prolongation of the continuants and a longer closure of stops. A geminate consonant is expressed orthographically with a single letter in Arabic, and a diacritic is known as *shadda* that is placed above the sound. *Shadda* literally means to tighten (Al-Tamimi et al. 2010).

Al-Ani (1993, p.78) stated that: ‘Geminated (long) consonants are regarded as identical clusters. Where the syllable boundary is concerned, the first member of the identical and non-identical cluster occurs as a coda of the preceding syllable, and the second member always occurs as an onset of the following syllable’. Such as:

/ʕabbad/ CVC-CVC ‘cause to eternalize’ 'عبَد'

/mattan/ CVC-CVC ‘cause to be strong’ ‘متَن '

3.3 The Phonology of Jordanian Arabic

3.3.1 The Linguistic Environment of Arabic Language in Jordan

As explained in Chapter 1, the local dialects in Jordan can be classified into Rural Jordanian Arabic, Urban Jordanian Arabic and Bedouin dialects. Each of these dialects is further divided into many sub-dialects.

The data presented in this study is analysed relying on the rural dialect.[15] The term *Jordanian Arabic* is loosely used to refer to this particular dialect.

3.3.2 Consonants in Jordanian Arabic (JA)

As shown in Table 3.4, Jordanian Arabic has twenty-nine consonant phonemes: seven stops /b, t, d, k, g,ʔ, q /, one emphatic stop /tˤ/, two nasals /m, n/, eleven fricatives /f, θ, ð, s, z, ʃ, x, ɣ, ħ, ʕ, h /, two emphatic fricatives /ðˤ, sˤ/, two affricates /ʧ, ʤ /, one lateral /l/, one flap /ɾ/, and two semivowels /j, w/.

Table 3.4: Consonants in JA

	Labial	Labio-dental	Interdental	Dental	Alveolar	Palatal	Velar	Uvular	Pharyngeal	Glottal
Stops	b			t d			k g	q		ʔ
Emphatic stops				tˤ						
Fricative		f	θ ð		s z	ʃ	x ɣ		ħ ʕ	h
Emphatic fricative			ðˤ		sˤ					
Affricate						ʤ ʧ				
Nasal	m				n					
Lateral					l					
Flap					ɾ					
Glide	w					j				

[15] The phonemic inventory used throughout this study is adapted from Al-Sughayer (1990) and AbuAbbas (2003).

Al-Sughayer (1990, p. 29) stated that: 'The non-syllabic segments in JA are similar to the non-syllabic segments in MSA except for the segments [q] and [dˤ] which JA lacks, and the segments [ʧ], and [g] which MSA lacks. Accordingly, the distinctive feature analyses in MSA largely apply to the analyses of JA.' Yet, it is worth mentioning that Jordanians use the /q/ in pronouncing some words, mainly names. Other linguists argued that uvular /q/ is in the JA inventory (AbuAbbas, 2003). In Table 3.4, I chose to add the /q/ as a sound in the phonemic inventory of JA.

The classification of MSA and JA consonants that is used in this study is set originally by Al-Sughayer (1990) and AbuAbbas (2003). The phonetic symbols are adapted into IPA symbol for the purpose of this study.

3.3.3 Vowels in Jordanian Arabic

Jordanian Arabic includes the same short and long vowels that MSA has but also includes two other long vowels: /ee/ and /oo/.

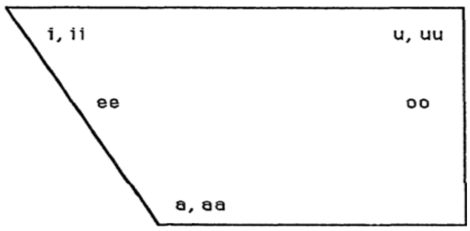

Figure 3.3: JA vowels adapted from Al-Sughayer (1990)

Al-Sughayer (1990) explained that the two mid-long vowels are actually a phonetic realization of the MSA diphthongs /aj/ and /aw/. /bajt/ 'home' is realised as /beet/ in JA and /qawm/ 'people' is realised as /goom/ in JA. However, MSA diphthongs are used in JA although not frequently. Abu Guba (2016, p. 12) added 'the two mid-long vowels [ee] and [oo] result from a diachronic monophthongisation process that affected SA diphthongs /aj/ and /aw/, respectively.' Vowels in MSA and their JA counterparts are shown in Table 3.6.

Table 3.6: Vowels in MSA and their JA counterparts	
MSA	**JA**
i	i
ii	ii
u	u
uu	uu
a	a
aa	aa
ay	ee (/aj/)
aw	oo (/aw/)

3.3.4 Syllable Structure in JA

AbuAbbas (2003), relying on Alghazu (1987) and Al-Sughayer (1990) explained that there are eight syllable patterns in JA. He clarified that syllable structure in JA licenses the same syllable types found in MSA (CV, CVV, CVC, CVVC, and CVCC) plus the following:

Table 3.7: Syllable patterns in JA		
Syllable type	**Example**	**Gloss**
CVVCC	/ʤaadd/	‘serious’
CCVC	/msik.to/	‘I grabbed him’
CCVVC	/ktaab/	‘a book’

In these syllable structures, the onset is also obligatory, and vowel-initial syllables are prohibited. However, consonant clusters within a syllable are allowed. AbuAbbas (2003) also added that in JA, CVC syllables will be considered light only in absolute final position, i.e., before a pause. As a result, a CVC in the final position has the same weight of a CV syllable. Hayes (1995) stated that the final CVC is equivalent in weight to non-final CV in MSA as well.

3. 4 Jordanian Arabic and English Phonology Comparison

3.4.1 Consonants

This section clarifies the differences between JA phonology and English phonology. Received Pronunciation (RP) is the source of data in this study. RP ‘is generally accepted accent variety of spoken standard southern English' O'Grady et al. (1997, p. 33).

Table 3.8: English consonants, from O'Grady et al. (1997)							
	Labial	Labio-dental	Inter-dental	Alveolar	Palate-alveolar	Velar	Glottal
Stop	p b			t d		k g	ʔ
Nasal	m			n		ŋ	
Fricative		f v	θ ð	s z	ʃ ʒ		h
Affricate					ʤ ʧ		
Liquid				l r			
Glide					j	w	

The distinction between the JA and English consonant inventory, as shown in Table 3.4 and Table 3.8, indicates that JA has a larger number of consonants than English with an overall number of 29 consonants including the emphatic ones comparing to 24 consonants in the English inventory plus /ʔ/, which is not regarded as a phoneme of standard English, but it is common in many varieties of British English, including contemporary RP. The main differences can be seen in the absence of emphatic sounds in English phonology. On the other hand, the voiced palato-alveolar /ʒ/, the voiceless labial stop /p/, the voiced velar nasal /ŋ/ and the voiced labiodental fricative /v/ are absent in JA. Although English and Arabic share similar classification of the place of articulation, it can be noted that JA velar and pharyngeal sounds (/x/, /ɣ/, /ħ/, /ʕ/) are absent in English.

3.4.2 Vowels

Jordanian Arabic (JA) has five vowels: /i/, /u/, /a/ (paired their long counterparts, /ii/, /uu/ and /aa/), /ee/ and /oo/ .On the other hand, O'Grady et al. (1997) explained that English vowels are divided into two major types, simple vowels and diphthongs. Simple vowels are produced without any noticeable change in quality. Three parameters define the main differences between vowels: height of the tongue, front/blackness of the tongue and position of the lip (roundness). The basic position of English monophthongs is shown in figure 3.4.

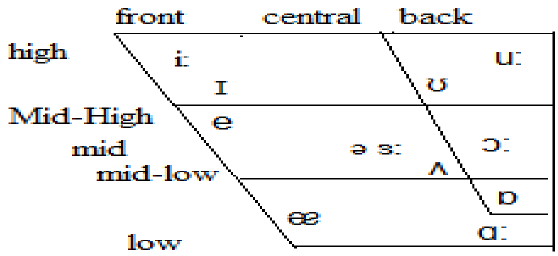

Figure 3.4: English RP vowels adapted from O'Grady et al., (1997)

Diphthongs in standard British English can be divided into centring diphthongs and closing (rising) diphthongs. Closing diphthongs are those whose final position is that of a close vowel; the tongue moves from a low position into a high position, a more open to a less open/close position: /aɪ/, /eɪ/, /ɔɪ/, /aʊ/, /əʊ/. In centring diphthongs, during the final phase of the vowel articulation, the highest point of the tongue moves towards the centre of the mouth: /eə/, /ʊə/, /ɪə/, /ɔə/. Figures 3.5 and 3.6 show the English diphthongs as described by Cahill (2019).

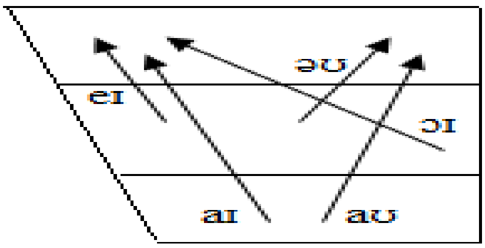

Figure 3.5: Rising diphthongs adapted from Cahill (2019)

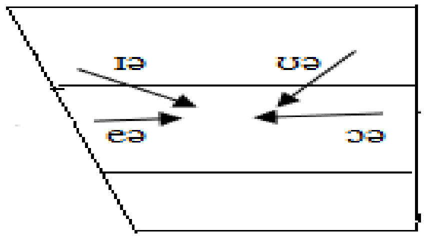

Figure 3.6: Centring diphthongs adapted from Cahill (2019)

Moreover, a syllable may contain three vowels or what is known as a triphthong. Cahill (2019, p. 62) explained that 'this refers to three vowel sounds all together, or, more accurately, a single vowel that has two movements between three different positions.' Cahill (2019) added that triphthongs are much rarer than diphthongs but they are used by people with some accents. For example: /aɪə/ in *buyer* and /aʊə/ in *bower*.

Such a significant difference in the number of vowels between JA and English can be explained due to the fact that JA is one of the varieties of Semitic languages, which are commonly distinguished by 'having a limited vocalic system and a rich consonantal system' (Watson 2002, p. 16).

3.4.3 Syllable Structure

Regarding the JA syllable structure, it has been previously explained that JA has a restricted number of allowed syllable sequence, mainly 8 syllable structures. In JA, the onset is an obligatory component of the syllable and any syllable must begin with a consonant so vowel-initial syllables are not permitted in JA. On the other hand, In English, the syllable structure can be illustrated as follows: (C)(C)(C)V(V)(C)(C)(C)(C). The vowel-initial syllable is allowed, and the vowel can stand as a syllable on its own.

The elements in parentheses are optional: the onset can have up to three consonants (following certain structural restrictions) and the coda up to four consonants. The only obligatory element is the nucleus, which is usually a vowel.

3.4.4 Stress-Assignment Principles in JA

According to AbuAbbas (2003), syllable quantity plays a major role in stress assignment in all Arabic dialects, including JA. In JA, a preantepenultimate syllable is never stressed. The rightmost heavy syllable is stressed, and if one is not found among the final three syllables of the word, then the antepenultimate syllable receives stress.

> 'JA is a weight-sensitive dialect, Stress is assigned to the rightmost heavy syllable provided that it is not separated from the right edge of the word by more than two syllables, i.e. preantepenultimate syllables are never stressed in JA. In the absence of a heavy syllable under the condition above, i.e., in the ultimate or penultimate syllable, the Antepenultimate is stressed' AbuAbbas (2003, p. 46).

To sum up, stress falls on a super heavy ultimate syllables, e.g. /taħ.ˈsiin/ 'developing' otherwise on a heavy penultimate, e.g. /is.ˈtaf.sar/ 'ask about', otherwise it falls on the antepenultimate,e.g./ˈiʃ.ta.ra/ 'he bought' (Bani Amer, 2019).In English language, on the other hand, the assignment of stress on a syllable is complicated and unpredictable (O'Connor 1973; Burzio 1994; Roach 1991).

In their contrastive study of stress in English and Arabic, Betti & Ulaiwi (2018) explained that stress placement in English is decided according to some factors such as:

its origin (whether it is of Greek or Latin origin), whether the word is morphologically simple, compound or complex (where affixes change word stress), the grammatical category of the word (such as nouns, verbs, adjectives and adverbs) and the number of syllables of the word. They pointed out that for disyllabic nouns; stress is often on the first while for trisyllabic nouns, they explained that if the final syllable is weak, or ends with one consonant, the middle syllable carries stress: e.g., *di΄saster*. If the final and middle syllables are weak, the initial syllable is stressed. Adjectives require the same rules. Regarding verbs, they asserted that in two-syllable verbs, stress is on the second syllable while three-syllable verbs, if the final syllable is strong, it carries stress: e.g., *enter΄tain*. If the last syllable is weak, the stress has to be on the preceding (penultimate) syllable e.g. *de΄termine*. If both the second and the third syllables are weak, the initial syllable carries stress e.g. *΄parody*. They added: 'there is a tendency for the antepenultimate syllable to carry primary stress e.g. *credibi΄lity*. If words consist of five or six syllables, the primary stress is on the fourth syllable, the secondary stress is either on the first syllable or on the second e.g. *organi΄sation*' (Betti & Ulaiwi, 2018, p. 84).

3.5 Conclusions

In this chapter, I provided a brief description of the phonology of MSA, the phonology of JA followed by a distinction between the phonology of JA and English. The description included consonants and vowels, syllable structure and stress assignment in JA and English.

The description presented in this chapter is used for the transcription of names in Chapter 4 and 5.

Chapter 4
Phonological Analysis of Names

4.1 Introduction

This chapter investigates the phonological patterns in male and female names in JA. It also investigates the positive phonaesthetic features of Jordanian names and the impact of sound symbolism on the phonological differences between male and female names. To this end, the top 100 female first names and top 100 male first names were collected from the civil service bureau for the most frequent and popular names in Jordan for the year 2017. Names have been transcribed using the IPA symbols according to JA, using the rural dialect sound system (See Appendix 1). Based on the literature discussed in Chapter 2, names are analysed according to the following features:

1. **Phonological patterns**
2. **Sound symbolism**
3. **Bouba-kiki effect**
4. **Phonaesthetic features**

The two sets of names were analysed, and the male and female features were compared. The analysis then examined the statistical significance of differences between the two groups to arrive at sets of male and female-weighted features.

4.2 Phonological Patterns of First Names

This section analyses the linguistic features of first names. Building on previous research explained in Chapter 2 (Slater & Feinman, 1985; Cutler, McQueen & Robinson, 1990; Klink, 2000; Zawaideh, 2006; Fredrickson, 2007; Mueller & Stumme, 2016), first names in Jordan are analysed in terms of the following:

1- Consonant types
2- Vowel types
3- Name-initial and name-final sounds
4- Type of syllables
5- Length of names

4.2.1 Consonant Types

As explained in Chapter 3, Jordanian Arabic has seven stops /b, t, d, k, q, ʔ, g/, two emphatic stops /tˤ/, /dˤ/ two nasals /m/, /n/, eleven fricatives /f, θ, ð, s, z, ʃ, x, ɣ, ħ, ʕ, /h/, two emphatic fricatives /ðˤ, sˤ/, one affricate /ʤ/, one lateral /l/, one flap /ɾ/, and two glides /j/, /w/.

The frequency of obstruents (stops, fricatives and affricates) and sonorants (nasals, lateral, flap, and glides) has been traced in both male and female names from the list of popular Jordanian baby names.[16] Figure 4.1 shows that male names have more obstruents while female names have more sonorants.

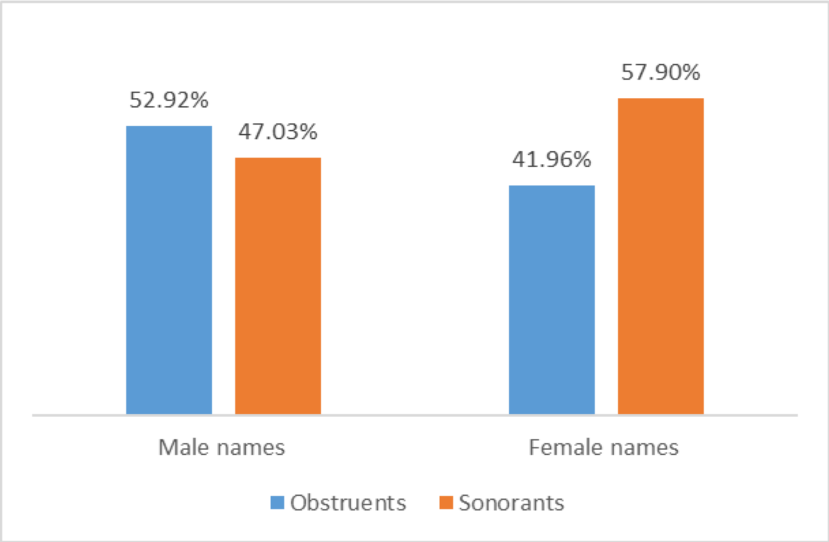

Figure 4.1: Frequency of obstruents and sonorants

4.2.1.1 Frequency of Obstruents

Figure 4.2 shows the frequency of different types of obstruents in male and female names. Among obstruents, fricatives are the most common sounds among male and female names followed by stops. In comparison, affricates are the least common in male and female names. Different types of obtruents added together accounts for 52.9 % in male names and 41.96% in female names.

[16] The distinction between obstruents vs. sonorants is not the same as strong vs. weak sounds because the terms weak and strong are only used in this study to refer to sound symbolic features.

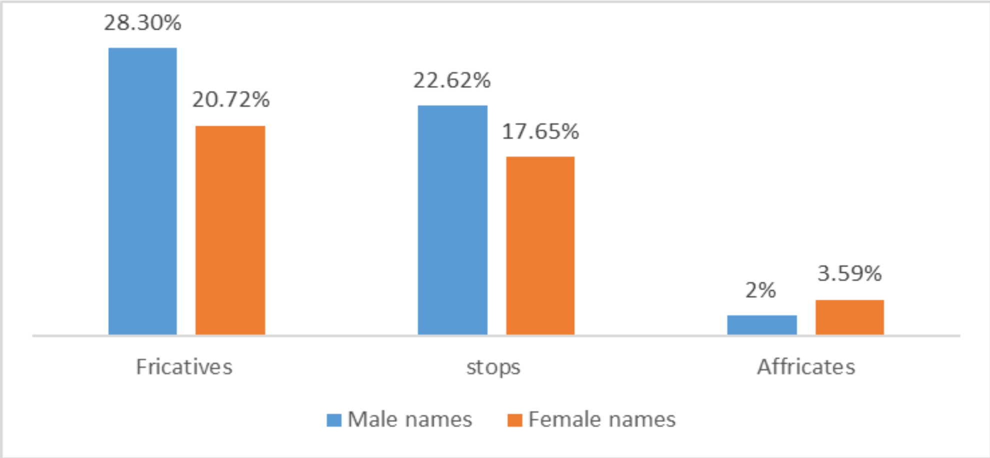

Figure 4.2: Frequency of obstruents

Regarding fricatives, sound /s/, as Table 4.1 shows, is the most common sound in male names and female names. The sound /ʕ/ is the second most common in male names, and sound /h/ is the second most common sound in female names. Emphatic /ðˤ/ is not found in any of the names under study. Percentages are calculated compared to the total number of all consonants in each name group. Male names include 342 consonants (out of a total of 618 sounds), while female names include 278 consonants (out of a total of 590 sounds).

Table 4.1: Frequency of fricatives in male and female names

Fricatives	Male names %	Female names %
/f/	2	2.15
/θ/	.5	0.0
/ð/	0.2	0.0
/ʃ/	0.8	1.74
/ɣ/	0.2	1.43
/x/	0.5	0.0
/ħ/	2.9	1.79
/ʕ/	5.5	0.35
/h/	3.5	4.67
/ðˤ/	0.0	0.0
/sˤ/	2.3	0.0
/s/	6.7	6.47
/z/	3.2	1.79

I analysed the distribution of sounds in terms of their structural position in the name: name-initial, name-final, syllable-initial and syllable-final. In this analysis, syllable-initial does not refer to the first syllable initial as it is counted as a name- initial, and syllable-final does not include the name-final. Distribution of fricatives in male and female names is as follows:

1. Labiodental fricative /f/ appears in male names in name-initial, name-final and syllable- initial position as in /ɾafiif/, /ɾahaf/, /juusif/, and /musˤtˤafaa/.
2. Interdental fricative /θ/ is found only in male names in name-final position as in /lajθ/ and /ɣajθ/.
3. The inter dental fricative /ð/ is found to be the least common fricative in both male and female names, as it is not traced in any of the female names and only one occurrence in male names as name-final in the name /muʕaað/ .
4. Palatal /ʃ/ is not common in both male and female names. It appears in name initial, syllable-initial and syllable-final in female names but only as syllable-initial and name-initial in male names. It is slightly more common in female names, mainly in name-initial position as in /ʃaam/ and /ʃahid/.
5. Velar fricatives /ɣ/ appears mostly in name-initial position in male and female names, as in: /ɣinaa/ and /ɣajθ/
6. Velar fricative /x/ appears only in name-initial position in two male names: /xaliil/ and /xaalid/.
7. In female names, the pharyngeal fricative /ħ/ appears in name initial, syllable initial, and name final position as in: /ħalaa/, /ɾaħmah/, /faɾaħ/. The same applies to male names as in: /ʔaħmad/, /ħamzih/, /sˤaaliħ/. However, /ħ/ appears mostly as syllable-final in male names as in: /jaħjaa/, /maħmuud/ and /ʔaħmad/
8. Pharyngeal fricative /ʕ/ is more common in male names and mostly as name-initial as in /ʕiisaa/, /ʕumaɾ /and /ʕalii/. It appears only once in a female name as a name-initial in /ʕaaʃih/.
9. Glottal fricative /h/ appears in male and female names with relative percentages in name-initial, name-final and syllable-initial position. However, it appears mostly syllable-initial in male names as in /ʔibɾahiim/, /fahid/ and /ʔadham/, while as name-final in female names as in /saaɾah/, /zeenah/ and /ʔamiiɾah/. The high frequency of /h/ as name-final in female names may be attributed to the fact that the feminine gender marker in Arabic is /ah/.

10. Emphatic /sˤ/ appears only in male names, in majority of occurrences as syllable-initial position as in /qusˤaj/ and /naasˤiɾ/ and name-initial positions as in /sˤuhajb/ and /sˤaaliħ/.
11. Alveolar fricative /s/ appears mostly as name-initial in female names as in: /samaa/, /siidɾaa/ and /siwaar/. It appears as name initial in male names as in /saalim/, /saamii/ and /seef/, syllable initial as in /ħasan/, /juusif/ and /wasiim/ and as name-final as in /ʔaws/, /ʔiljaas/ and /qajs/.
12. Alveolar fricative /z/ appears in both male and female names in name-initial, syllable-initial and name-final position. It appears more in name-final position in male names as in /ʕabdelʕaziiz/ and /muʕtaz/.

Regarding stops, as Table 4.2 shows, sound /d/ is the most common sound in male names followed by sound /ʔ/. Sound /g/ is the least common in male names, while geminated /dd/ is not found in any of the female names.

Table 4.2: Frequency of stops in male and female names		
	Male names %	**Female names %**
/b/	2.6	2.51
/t/	0.8	3.95
/d/	9.9	3.59
Geminated /dd/	1.1	0.0
/k/	1.75	1.43
/g/	0.2	0.74
/q/	0.5	0.74
Emphatic /tˤ/	1.17	0.35
/ʔ/	4.6	4.3

Distribution of stops in male and female names is as follows:

1. The labial stop /b/ shows close results of frequency in both male and female name. However, it is found that there is a great tendency to have the labial /b/ as a name-initial in female names as in /baanaa/ and /bajlasaan/. Labial /b/ is more common in syllable-final position in male names as in: /ʕabdilkaɾiim/, /ʔibɾahiim/.
2. The dental stop /t/ is more common in name initial position in both male and female names as in /talaa/ and /tajm/. /t/ is never used as name-final.

3. The dental stop /d is the most common stop in male names, mostly as a name-final as is /maadʒid/, /muhannad/ and /ɾaʕid/. It appears as syllable-initial/ʕudaj/, syllable-final as in /ʔadham/, but is not found as name-initial in any male names. In female names. /d/ appears as name-final as in /dʒuud/, name initial as in /daanaa/ and mostly as syllable-initial as in /sadiin/. It is worth mentioning that geminated /dd/ is found with a percentage of 1.1% in male names as in: /nuuɾiddiin/ /ʕizziddiin/ and /sˤaddaam/ while it is totally absent in female names.
4. The velar stop /k/ appears in male names as name-initial as in /kinaan/, syllable-initial as in /ɾaakaan/ and name-final as in /maalik/. In female names, it appears as name-initial as in /kindaa/ and name-final as in /malak/. Sound /k/ appears mostly as name final in female names.
5. The velar stop /g/ appears only as name-final in male names as in /tˤaaɾig/while it appears as name-initial as /gamaɾ/and name-final as in /ʃoog/ in female names.
6. The uvular stop /q/ appears only as name-initial in male names as in /qajs/ and only as syllable-initial in female names as /tuqaa/.
7. The emphatic dental stop appears in female names only as syllable-final as in /fatˤmih/. In male names, it appears as name- initial as in /tˤaaɾig/ and as syllable-initial as in /sultˤaan/.
8. Glottal stop /ʔ/ is the most common stop in female names with the majority of the occurrences as name-initial as in /ʔaliin/. It also appears as name-final as in /ʔaalaaʔ/. In male names, it appears mostly as name-initial as in /ʔanas/. It also appears as syllable-final as in /muʔmin/and syllable-initial as in /seefʔiddiin/.
9. For affricates**,** palatal affricate /dʒ/ appears mostly as name-initial in male and female names as in /dʒamaal/ and /dʒuudii/. It is worth mentioning, as Table 4.3 shows, that the palatal affricate /tʃ/ is not found in male or female names, although it is part of the JA consonants but is rarely used now.

Table 4.3: Frequency of affricates		
	Male names %	**Female names %**
/dʒ/	2	3.59
/tʃ/	0.0	0.0

4.2.1.2 Frequency of Sonorants

Regarding sonorants, as figure 4.3 shows, female names tend to have more sonorants than male names. Nasals are the most common in both male and female names. Female names have more laterals and more flaps than male names.

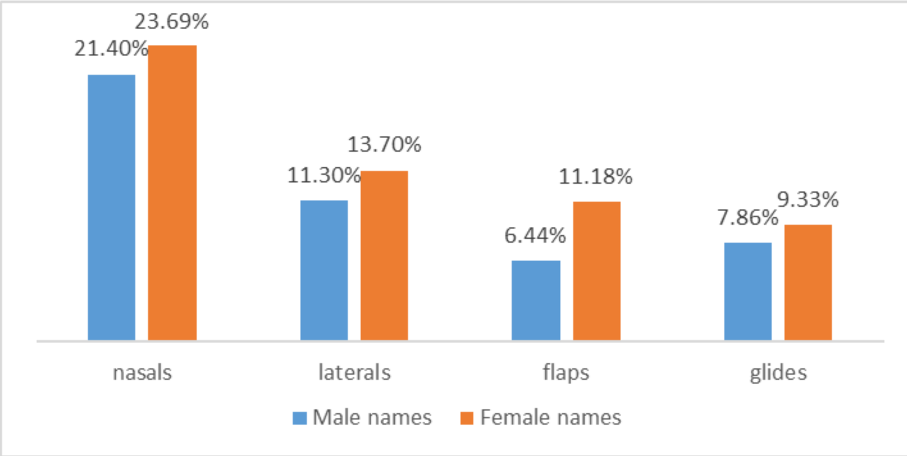

Figure 4.3: Frequency of Sonorants in male and female names

Table 4.4 shows the frequency of sonorants in detail. Percentages of different types of sonorants are added up to 47.3 % in male names and 57.9% in female names as shown in figure 4. 1. Overall, /m/ is the most frequent sound in male names, while sound /l/ is the most frequent in female names.

Table 4.4: Frequency of sonorants in male and female names

Sound	Male names %	Female names %
/m/	13.7	10.74
/mm/	0.23	0
/n/	7.3	12.95
/nn/	0.2	0
/l/	7	13.7
/ll/	4.3	0
/ɾ/	6.44	11.18
/j/	6.13	7.94
/w/	1.73	1.44

It is worth mentioning that geminated sounds are considered as 2 consonants in transcription. However, when I analyse the frequency of the geminated sounds, I consider it as one sound only.

The distribution of sonorants in the names under study is as follows:

1. Labial nasal /m/ appears in syllable-initial or syllable-final position, name-initial or name-final in most cases, as in: /ʔamiiɾ/, /ħamzih/, /musˤtˤafaa/ and /ʔaadam/ but mostly, it appears in name-final and syllable-final position. In female names, it appears in name-initial, syllable initial and name-final as in: /maɾaħ, /diimaa/ and /ʃaam/, but mostly as syllable-initial and name-initial.
2. Geminated /m/ is not found in female names and only as syllable-initial and syllable-final in male names, as in: /ʕammaɾ/ and /mħammad/. As Al-Ani (1993) explained, where the syllable boundary is concerned, the first part of the geminated sound occurs as a coda of the preceding syllable. The second part always occurs as an onset of the following syllable. The geminated consonant is ambi-syllabic.
3. The alveolar nasal /n/ is more common in female names. It appears mostly as name-final as in /tuuliin/. It also appears as syllable-initial as in /baanaa/ and as name-initial as in /nadaa/. In male names, it appears mostly as name-final as in /muʔmin/. It also appears as name-initial as in /naasˤiɾ/ and syllable-initial as in /kinaan/.
4. Geminated /nn/ appears only once in male names in /muhannad/.
5. /l/ is most common as syllable-initial in both male and female names as in /siilaa/, /ɣalaa/ and /saalim/, /maalik/. /l/ is more common as name-initial in female names compared to male names as in /luʤajn/, /lajaan/, /liin/, while it is more common as name-final in male names as in: /feesˤal/, /janaal/.
6. Geminated /ll/ is found only in males names as in: /ʕabdallah/ and absent in female names.
7. It is worth mentioning that in one case, the flap /ɾ/ appears as part of consonant cluster name-finally in a male name that is /waɾd/. Flap /ɾ/ appears more in name-initial position in female names than in male names as in /ɾafiif/, /ɾiitaal/,

/ɾiim/. In comparison, it is more common as syllable-initial and name-final in male names as in /tˤaaɾig/ and /ʕamɾ/.

1. Labial glide /w/ appears only as syllable-initial in female names as in /watiin/. On the other hand, the majority of cases of /w/ in male names appears as name-initial as in /waɾd/. It is also part of the consonant cluster in one of male names in /ʔaws/.
2. Glide /j/ appears mostly as syllable-initial in female names as in /maaɾjah/ while as name-initial in male name as in /jasiin/.
3. Regarding geminated /jj/, it appears in male names as in /ʔajjuub/ and /ɾajjaan/, while it is absent in female names.

Table 4.5 shows the frequency of all consonants in descending order.

Table 4.5: Frequency of consonants in male and female names			
Sound	**Male name %**	**Sound**	**Female names %**
/m/	13.7	/l/	13.7
/d/	9.9	/n/	12.95
/n/	7.3	/ɾ/	11.18
/l/	7	/m/	10.74
/s/	6.7	/j/	7.94
/ɾ/	6.44	/s/	6.7
/j/	6.13	/h/	4.67
/ʕ/	5.5	/ʔ/	4.31
/ʔ/	4.6	/t/	3.95
/ll/	4.3	/ʤ/	3.95
/h/	3.5	/d/	3.59
/z/	3.2	/b/	2.51
/ħ/	2.9	/f/	2.15
/b/	2.6	/z/	1.79
/sˤ/	2.3	/ʃ/	1.79
/f/	2	/ħ/	1.79
/ʤ/	2	/k/	1.43
/k/	1.7	/ɣ/	1.43
/w/	1.73	/w/	1.44
/tˤ/	1.1	/g/	0.74
/dd/	1.1	/q/	0.74
/t/	0.8	/tˤ/	0.35
/ʃ/	0.8	/ʕ/	0.35
/q/	0.5	/ð/	0.0
/θ/	0.5	/ðˤ/	0.0
/x/	0.5	/sˤ/	0.0
/mm/	0.5	/x/	0.0
/g/	0.2	/ʧ/	0.0
/ɣ/	0.2	/θ/	0.0
/ð/	0.2	/mm/	0.0
/nn/	0.2	/ll/	0.0
/ðˤ/	0.0	/nn/	0.0
/ʧ/	0	/dd/	0

4.2.2 Frequency of Vowels

Jordanian Arabic has three short vowels /i/, /u/, /a/, and three long counterparts /ii/, /uu/, and /aa/. JA has also two mid long vowels that are /ee/ and /oo/. These vowels are actually equivalent to a phonetic realization of the MSA diphthongs /aj/ and /aw/. The MSA diphthongs are also used in JA.

As figure 4.4 shows, front vowels are more common in both male and female names than back vowels. Female names have more long front vowels /aa/ and /ii/ and more long back vowel /uu/ than male names. On the other hand, male names tend to have more short front vowels /a/ and /i/ and more short back vowel /u/ than female names. Regarding the mid long vowel /ee/, it appears more in male names while /oo/ appears more in female names but in close percentages.

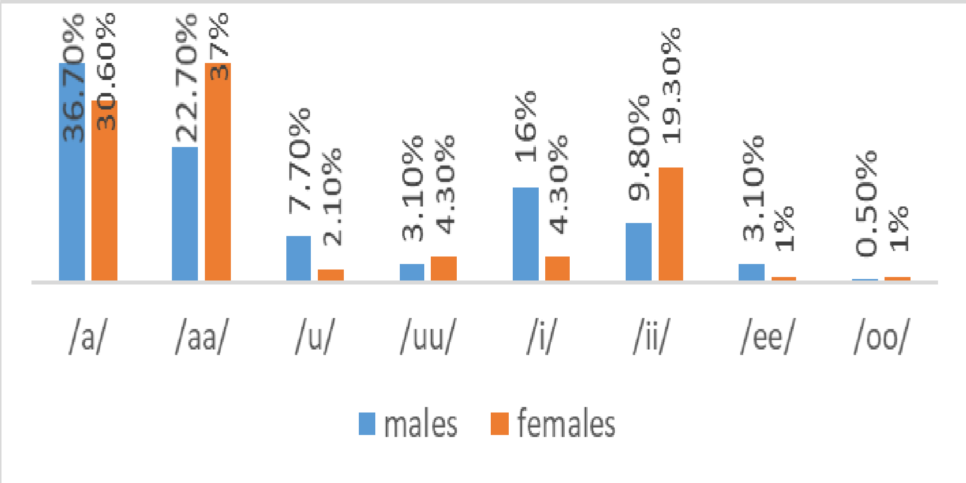

Figure 4.4: Frequency of vowels

Table 4.6 shows vowels frequency in male and female names in descending order**.**

Table 4.6 : Frequency of vowels in male and female names

Vowel	Male names	Vowel	Female names
/a/	36.70%	/a/	30.60%
/aa/	22.70%	/aa/	37%
/i /	16%	/ee/	1%
/ii/	9.80%	/i /	4.30%
/u/	7.70%	/ii/	19.30%
/uu/	3.10%	/oo/	1%
/ee/	3.10%	/u/	2.10%
/oo/	0.50%	/uu/	4.30%

4.2.3 Length of Names

As figure 4.5 shows, male names are longer (more phonemes per name) than do female names. In general, the average length for male names is 6.18 compared to 5.9 for female names.

Analysing the number of consonants and vowels in male and female names, it can be noticed that male names tend to have more consonants than female names. On the other hand, female names tend to have more vowels than male names. Vowels make up 52.8% of female names sounds compared to 44.6% among male names. It is worth mentioning that long vowels are counted as two segments as there are two vowel slots in each of them and the same applies to geminated consonants.

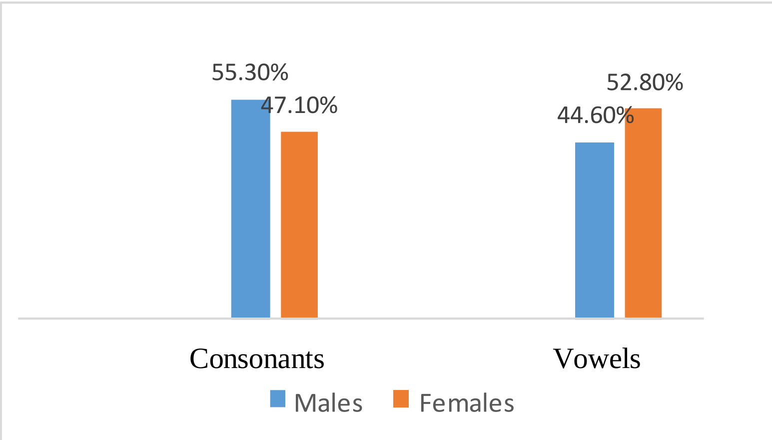

Figure 4.5: Number of consonants and vowels

The finding that female names tend to have more vowels maybe related to the previous finding of having more sonorants in female names. Sonorants share with vowels the ability for sustained production and the absence of a noisy impression.

4.2.4 Name-Initial and Name-Final Sounds

Figure 4.6 shows that male names and female names tend to have more obstruents as name-initial. Male names tend to have more fricatives and glides as name initial sounds compared to female names.

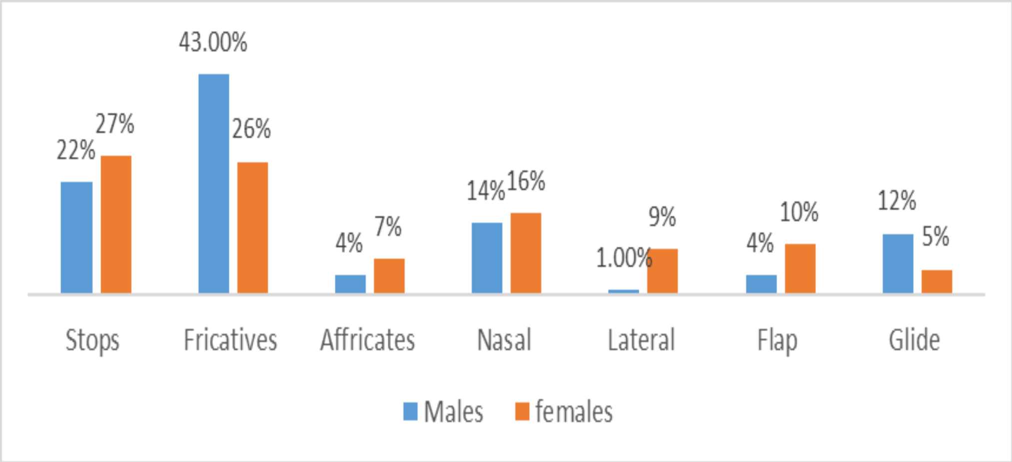

Figure 4.6: Name-initial sounds

On the other hand, female names tend to have more initial stops, affricates, nasals, laterals and flaps compared to male names. Table 4.7 shows percentages of male and female name-initial sounds among all names, and they are arranged in descending order. Sound /ʕ/ is the most common male name-initial sound, while /m/ is the most common female name-initial sound.

Table 4.7: Male and female name-initial sounds			
Sound	**Male names (100 names) %**	**Sound**	**Female names (100 names) %**
/ʕ/	16	/m/	13
/ʔ/	14	/ʔ/	11
/m/	12	/ɾ/	10
/j/	8	/s/	9
/s/	7	/l/	9
/ħ/	4	/ʤ/	7
/ʤ/	4	/b/	6
/ɾ/	4	/t/	6
/w/	4	/ʃ/	3
/k/	3	/ɣ/	3
/f/	3	/n/	3
/z/	3	/j/	3
/sˤ/	3	/d/	2
/t/	2	/f/	2
/tˤ/	2	/z/	2
/q/	2	/ħ/	2
/x/	2	/h/	2
/n/	2	/k/	1
/b/	1	/g/	1
/ʃ/	1	/ʕ/	1
/ɣ/	1	/w/	1
/h/	1	/tˤ/	0.0
/l/	1	/q/	0.0
/g/	0.0	/dd/	0.0
/d/	0.0	/θ/	0.0
/dd/	0.0	/x/	0.0
/θ/	0.0	/ð/	0.0
/ð/	0.0	/ðˤ/	0.0
/ðˤ/	0.0	/sˤ/	0.0
/mm/	0.0	/mm/	0.0
/nn/	0.0	/nn/	0.0
/ʧ/	0.0	/ʧ/	0.0
/ll/	0.0	/ll/	0.0

Regarding name-final sounds, figure 4.7 shows that female names are more likely to end in a vowel (open syllable) compared to male names, while male names obviously tend to end in a consonant (closed syllable).

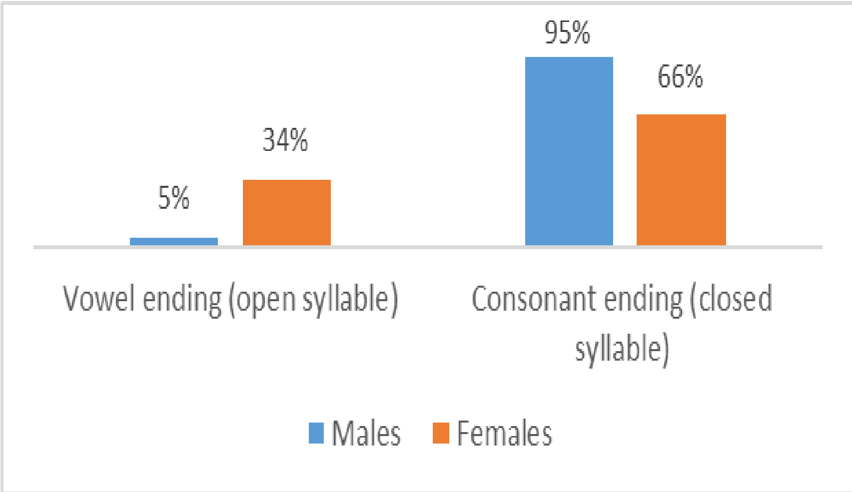

Figure 4.7: Name-final sounds

Table 4.8 shows percentages of name-final sounds in the 100 most common male and female names, and they are arranged in descending order. Sound /d/ is the most frequent male name-final sound, while long vowel /aa/ is the most common female name-final sound.

Table 4.8: Male and female name-final sounds			
Sound	**Males names (100 names) %**	**Sound**	**Females names (100 names)**
/d/	22	/aa/	33
/n/	19	/n/	22
/m/	15	/h/	8
/l/	7	/l/	7
/ɾ/	7	/ɾ/	5
/s/	5	/m/	4
/aa/	4	/ii/	3
/ii/	2	/d/	3
/θ/	2	/k/	3
/f/	2	/f/	3
/z/	2	/ħ/	2
/b/	2	/g/	1
/j/	2	/ʔ/	1
/ð/	1	/z/	1
/k/	1	/ʤ/	1
/g/	1	/s/	1
/ħ/	1	/ð/	0.0
/h/	1	/θ/	0.0
/ʤ/	1	/b/	0.0
/ʔ/	0.0	/j/	0.0

4.2.5 Type of Syllables

Three syllable features have been studied in the collection of names: the type of syllable (light, heavy, super heavy), the type of initial syllable, and the number of syllables per name.

4.2.5.1. Type of Syllables

Figure 4.8 shows slight differences between male and female names regarding the type of syllables. A slight difference can be noticed with female names tendency of having heavy syllables. Light syllables are slightly more frequent among female names than male names, while super heavy syllables are slightly more frequent in male names

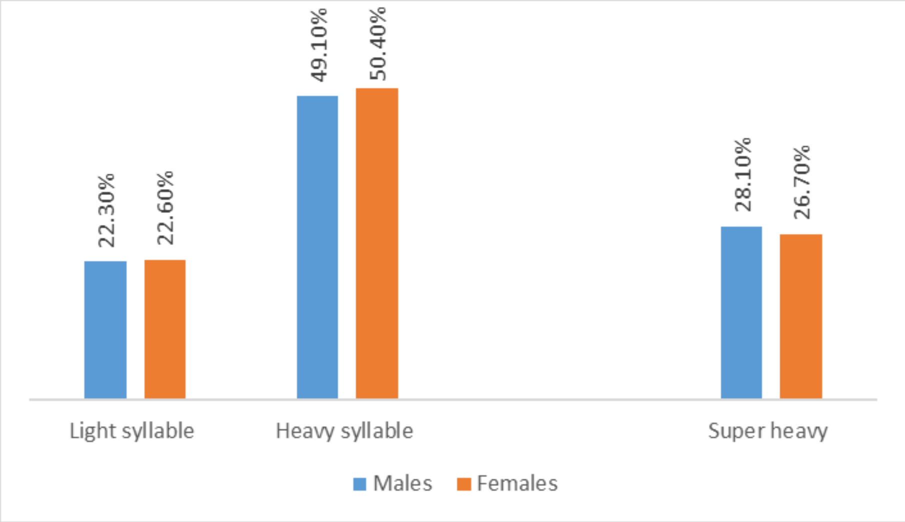

Figure 4.8: Type of syllables

4.2.5.2 Initial Syllables

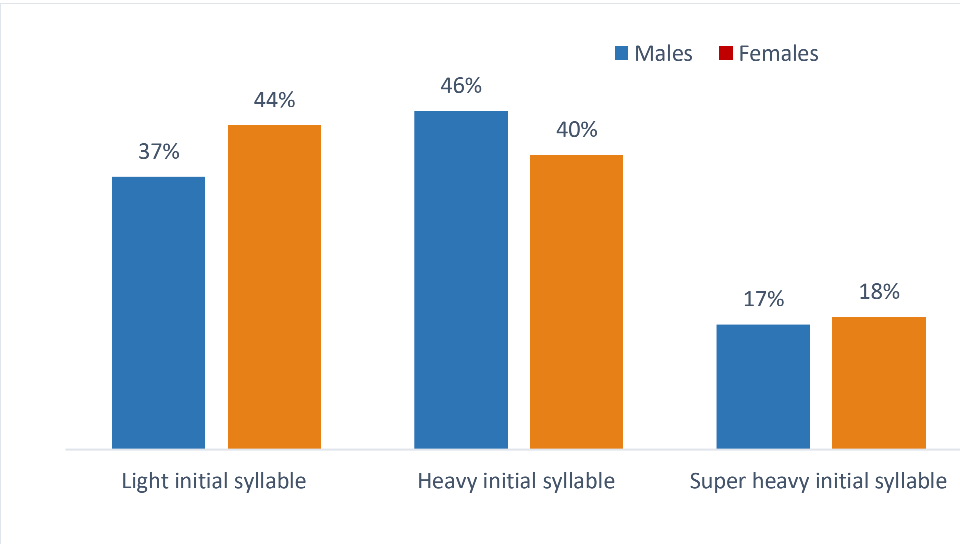

Figure 4.9: Type of syllables

Regarding the initial syllable, figure 4.9 shows that male names tend to have more heavy initial syllables. Female names, on the other hand, tend to have more light initial syllables than their male counterparts.

4.2.5.3 Number of Syllables

Analysing the number of syllables in male and female names, it is found that, as figure 4.10 shows, most male and female names are disyllabic. However, there are more disyllabic female names than among male names. On the other hand, there are more trisyllabic male names than female names. Regarding the monosyllabic names, there are fewer monosyllabic female names than male names.

It is worth mentioning that no quadrisyllabic female names have been found while only two male names are quadrisyllabic: /ʕabdilɾaħmaan/ and /ʕabdelʕaziiz/.

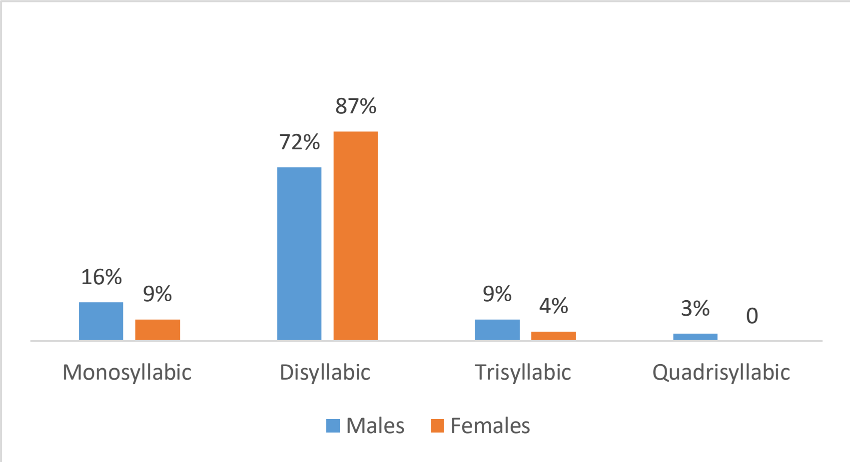

Figure 4.10: Number of syllables in male and female names

4.3 Male and Female Name Features: Summary

Initial statistical analysis of the names under study reveals that female names can be associated with the following features:

1. Tend to have more sonorants in general than male names
2. Tend to have more affricates than male names.
3. Most common fricatives are /s/, /h/ and /f/ respectively, and the most common stops are /ʔ/, /t/ and /d/ respectively.
4. Tend to contain more long front vowels /aa/ and /ii/, more long back vowel /uu/ and more long mid vowel /oo/ than their male counterparts.
5. Tend to be shorter than male names.
6. Tend to contain more vowels and tend to end in vowels, open syllable ending.
7. Tend to have more stops, affricates, nasals, laterals, flaps as beginning sounds than their male counterparts.
8. Tend to have more light and heavy syllables than male names.
9. Tend to have light initial syllables and super heavy initial syllables.

10. Tend to be disyllabic.
11. Do not have any geminated sounds.
12. The only emphatic sound that is traced is /tˤ/ in just one name among the 100 female names.

On the other hands, male names can be associated with the following features:

1. Tend to have more obstruents.
2. Most common fricatives are /s/, /ʕ/ and /h/ respectively, and the most common stops are /d/, /ʔ/ and /b/ respectively.
3. Tend to contain more short front vowels /a/ and /i/, more short back vowel /u/ and more mid-long vowel /ee/ than their female counterparts.
4. Tend to be longer than female names.
5. Tend to contain more consonants and tend to end in consonants, closed syllable ending.
6. Tend to have more fricatives and glides as beginning sounds.
7. Tend to have more super heavy syllables than female names.
8. Tend to have heavy initial syllables.
9. Tend to be more monosyllabic, trisyllabic and quadrisyllabic compared to female names.
10. Tend to have geminated sounds and emphatic sounds more than female names.

4.3.1 Significant Gender-Sounds.

The previous listing of name and female name features was based on quantitative analysis. To check what features can be used to create male–weighted or female-weighted names, differences between the male and female patterns have been tested using an online Chi-Square test (Stangroom, 2021).The Chi-square test requires a minimum count of 5 in each cell, and some of the observed values were too small, which makes it impossible to run a chi-square test on each comparison. In the case of the features with small values, the assumption is based on the distributions presented previously.

These features have been tested to find out significant features using the Chi-Square test are:

1. Frequency of fricatives

2. Frequency of stops
3. Frequency of sonorants
4. Frequency of vowels
5. Initial sounds
6. Syllable types
7. Number of syllables
8. Initial syllable
9. Final sounds

The following features are reported to be significant:

- Name-initial and name-final /m/, syllable-initial and syllable-final /m/: $\chi 2$ (4, N= 94) =8.9539 p=.02991 with name initial /m/ more frequent in female names and syllable-final & name-final /m/ in male names.
- Syllable type (heavy syllables; CVV, CVC),$\chi 2$ (1, N= 197) = 33.3021 p < .00001. It is found that CVC is a significant feature in male names while CVV is significant in female names.
- Initial syllable, $\chi 2$ (2, N= 126) =10.0285.p =.006643. It is found that initial CVVC is significant in female names while initial CVC is significant in male names.
- Final syllable,$\chi 2$ (2, N= 168) = 28.6441.p < 0.00001. It is found that final CVC is significant in male names while final CVV is significant in female names.

Regarding other features, the following suggestive trends were observed:

- Frequency of fricatives: more pharyngeal sounds in male names and glottal in female names.
- Frequency of stops: sound /d/ is more frequent in male names and /t/ in female names.
- Final fricatives: glottal fricative are more frequent in female names and interdental fricatives in male names.
- Initial affricate, nasals, lateral: initial glides are more frequent in male names and initial lateral in female names.

- Frequency of vowels: /i/ is more frequent in male names and /a/ in female names.
- Initial fricatives: pharyngeal fricatives are found more in male names.
- Name final nasals: more name-final /m/ in male names while more name-final /n/ in female names.

Following this analysis, a list of male and female name features has been identified. Sounds that are not significant or equally distributed in one of the explained positions are considered gender-neutral. Table 4.9 shows male and female name sounds and neutral sounds.

Table 4.9: Male and female name sounds and neutral sounds.

	Male	**Female**	**Neutral**
Name-initial	/ʕ/, /w/, /j/, /ħ/	/l/, /t/, /b/, /m/, /ɾ/, /s/, /ʃ/, /h/	/ʤ/, /z/,/f/,/ɣ/,/k/,/n/
Syllable-initial	/sˤ/, /dd/, /ll/, /mm/, /nn/, /h/, /ɾ/	/t/, /j/, /m/	/b/, /r/, /z/, /s/, /k/, /f/, /g/
Syllable-final	/ħ/, /d/, /aa/, /b/, /m/	/ii/, /a/, /ɾ/	/z/, /s/, /k/,/f/, /g/ /ʤ, /z/, /n/, /u/, /uu/
Vowels	/i/, /aa/	/a/, /uu/	
Name-final	/m/, /s/, /d/, /z/ /θ/, /ð/	/aa/, /h/, /n/	/b/, /ʤ/, /ħ/, /ɾ/, /ʃ/, /f/ /k/, /g/, /w/
Initial-syllable	CVC	CVVC, CV,CVV	CCVC
Final syllable	CVC	CVV	CVVC,CCVC

4.4 Phonaesthetics in Jordanian Names

As previously explained in Chapter 2, relying on the previous analysis on research on Arabic Language sound properties and the previous research in the field of phonaesthetics (Zawaideh, 2006; Allerton, 1987; Crystal, 1993; Zuraiq,1999), names are said to have positive phonaesthetic structure if they have the following features:

1. Have the following sounds: /l/, /m/, /n/, /j/.
2. Ends with an open syllable, i.e. ends with a vowel.
3. The number of vowels is equal to, or surpasses, the total number of the consonants

4. The length of the word is relatively short.
5. Does not contain /ʕ/, /ðˤ/, /x /, /ɣ/ or /h/ name initially.
6. The place of articulation changes throughout the articulation of the word.
7. The manner of articulation changes throughout the articulation of the word

The more of these properties a name contains the more phonaesthetically desirable it is. The following sections trace these features in male and female names under study.

4.4.1 Names Have the Following Sounds: /l/, /m/, /n/, /j/

In male and female names, it is found that the sounds /l/, /m/, /n/, /j / make up 35.7% of all consonants. It is found that /l/, /n/, /m/ and /j/ are among the first top five most frequent sounds in female sounds while /m/, /n/ and /l/ can be found among the most frequent sounds in male names.

Table 4.10: Frequency of /l/,/m/, /n/ and /j/ in male and female names

	Male %	Female %	Total in male and female name consonants %
/l/	7	13.6	10
/m/	14.3	10.7	12.4
/n/	7.3	12.9	9.8
/j/	6.1	7.9	7.2
Total	34.7	44.8	35.7

Table 4.10 show that female names tend to have more /l/ and /n/ sounds while male names have more /m/. Percentages are calculated out of 620 (number of consonants in male and female names). To test significance of the result, chi square test was applied and the results show $\chi 2$ (3, N= 248) = 9.3039 p=.025511. /m/ occurs more than expected in male names, and less frequently than expected in female names.

4.4.2 Ends with an Open Syllable, i.e. ends with a vowel

Regarding the second feature, figure 4.11 shows that female names are more likely to end in a vowel than male names are, with 34% of female names ending in vowels and only 5% of male names. This finding means that female names are more aesthetically pleasant than male names.

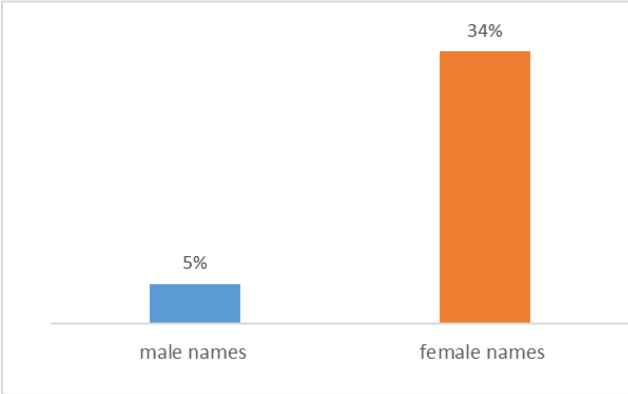

Figure 4.11: open syllable ending

4.4.3 The Number of Vowels is Equal to, or Surpasses, the Total Number of the Consonants

The third criterion deals with the number of vowels. A name is considered more beautiful if the number of vowels is equal to, or surpasses, the total number of consonants. Table 4.11 shows that female names tend to have more vowels than consonants, which means that female names are more aesthetically pleasant in terms of the number of vowels.

Table 4.11: Number of vowels and consonants in male and female names

	Male	**Female**
Consonants	342 55.3%	278 47.1%
Vowels	276 44.6%	312 52.8%
Total	618	590

4.4.4 The Length of the Word is Relatively Short

As Table 4.12 shows, male names tend to have more phonemes than do female names. Male names under study contain a total of 618 phonemes, while female names have 590 phonemes. In general, the average length for male names is 6.18 compared to 5.9 for female names. Although this difference is very slight, it is suggestive that female names are considered more aesthetically pleasant in terms of word length as well.

Table 4.12: Number of consonants and vowels in males and female names		
	Males	**Females**
Consonants	342	278
Vowels	276	312
Total	618	590

4.4.5 Doesn't Contain /ʕ/, /ðˤ/, /x /, /ɣ/ or /h/ Name-Initially

Regarding the fifth criterion, sounds /ʕ/, /ðˤ/, /x/, /ɣ/ and /h/ name-initially are not preferred in beautiful, pleasant sounding names.

Table 4.13: Dispreferred sounds in Arabic names			
	Males %	**Females %**	**Total in male and female names**
/x/	0.5	0.0	0.3
/ɣ/	0.2%	1.4	0.8
/ʕ/	5.5	0.3	3.3
/ðˤ/	0.0	0.0	0.0
/h/ name initially	1	2	1.5
Total	7.2	4.8	5.9

As Table 4.12 shows, sounds that are found to be dispreferred are not common in Jordanian names. In general, these sounds appear with a percentage of just 5.9% of the total number of consonants in male and female names. Female names appear to have fewer of these sounds, which mean that they are more aesthetically pleasant compared to male names.

4.4.6. The Place of Articulation Changes throughout the Articulation of the Word

Regarding the place of articulation for sounds in names under study, Table 4.14 shows that the majority of male names tend to have more than one change in the place of articulation. In comparison, the majority of female names tend to have one change.

Therefore, on this measure, male names should be more attractive.

Table 4.14: Change in place of articulation in names			
	No change	**One change**	**More than one change**
Male	2%	35%	63%
Female	9%	54%	37%

4.4.7 The Manner of Articulation Changes throughout the Articulation of the Word

As Table 4.15 shows, the majority of male and female names tend to have more than one change in the manner of articulation with a percentage of 64% in male names and 50% in female names.

Table 4.15: Change in the manner of articulation in names			
	No change	**One change**	**More than one change**
Male	2%	34%	64%
Female	3%	47%	50%

Phonaesthetically speaking, both male and female names tend to have positive phonaesthetic features and avoid negative features. Sounds /l/, /m/ /n/ and /j/ are presented in male and female names with high frequency. However, female names tend to have more positive features, as they tend to be shorter, tend to have more vowels and tend to end in vowels. Female names also have fewer of the dispreferred sounds compared to male names.

Male names surpass female names in phonaesthetic qualities on one of the features, namely the change in place and manner of articulation. The higher tendency in male names to have more than one change in the place and manner of articulation than female names do can be attributed to the fact that male names are longer and have more consonants, which allows them more opportunity to have more changes in place and manner.

4.5 Sound Symbolism in Jordanian Names

In Chapter 2, the topic of sound symbolism has been discussed thoroughly. The main two studied characters are the strength of sounds and the front-back vowel association with maleness and femaleness. In the following section, I analyse these sound symbolic features in JA names.

4.5.1 Strong vs. Weak Sounds in Jordanian First Names

Arabic sounds have their significant features; Arab linguists believe that these features can be associated with the meanings these sounds can convey. Extensive research has been undertaken including old Arab linguist research to define strong, weak and moderate sound characteristics. A list then has been made classifying sounds relying on their strength. These sounds have then been traced in male and female names under study to check the sound symbolism hypothesis that strong sounds are associated with strength meaning and maleness. In contrast, weak sounds are related to weak actions and meaning and to femininity.

Relying on the previous research on sound symbolism in Arabic (Ibn Jinni, 1999; Anis, 1999; Abbas, 1998; Jabal, 2008; Najjar, 2010; Achmad, 2019; Arabeed, 2010),a list of weak and strong sounds in Arabic has been created as shown in Table 4.16.

Table 4.16: Strong and weak Arabic sounds

Strong sounds	**Weak sounds**
/ʤ/	/ħ/
/q/	/θ/
/d/	/k/
/b/	/h/
/ɾ/	/s/
/sˤ/	/ʃ/
/tˤ/	/t/
/dˤ/	/f/
/ðˤ/	/z/
	/w/
	/j/
	/ð/
	/ʕ/

Relying on this classification and building on sound symbolism research, I hypothesise that strong sounds are used more in male names while weak sounds are used more in female names.

These sounds were traced in male and female names. Figure 4.12 shows the occurrences of strong sounds in male and female names. It is found that /d/ occurred in male names more than in female names, which is consistent with the expectation that strong sounds are associated with maleness. Strong sound /b/ and /tˤ/ and /sˤ/ appear slightly more in male names. Strong sound /ɾ/ is more common in female names.

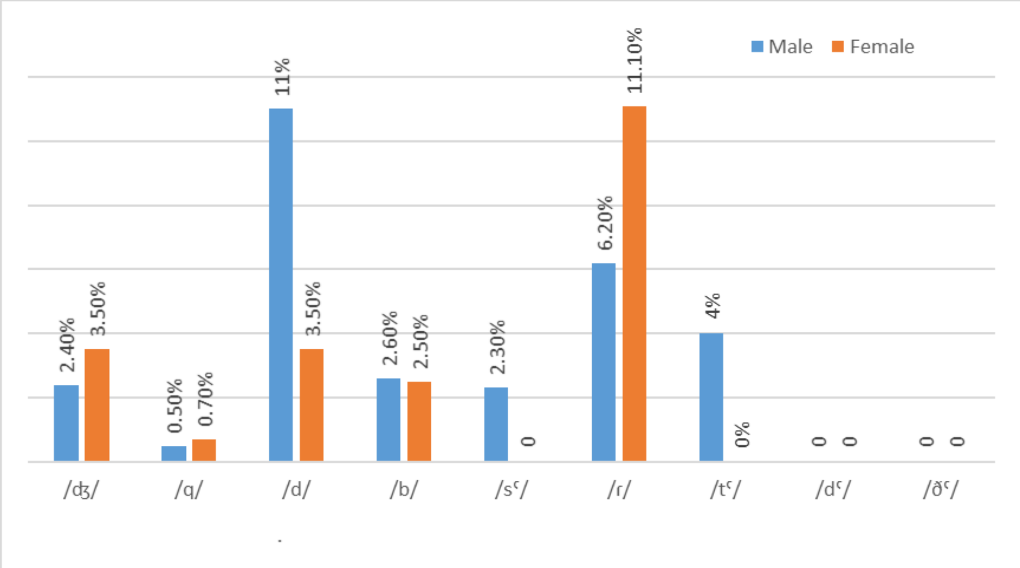

Figure 4.12: Strong sounds in male and female names

Regarding the occurrences of weak sounds in male and female names, it is found, as figure 4.13 shows that sound /ħ/, /h/, /ʃ/, /f/, /j/ and /t/ appear more in female names than in male names, which is consistent with the expectation that weak sounds are used to express femaleness. Sound /θ/, which is used to express femaleness in all Arabic linguistics research, as it is associated with the word /ʔunθa/ 'female', is not found in any female names in the list. It appears with a percentage of .5% in male names. Sounds /z/, /w/, /k/, /ʕ/ and /s/ are found to appear more in male names. Weak sound /ʕ/ appears more in male names. Such a result is consistent with what is previously explained about the meaning of strength and aggressiveness that this sound can convey (Najjar, 2010 and Muftah, 1986).

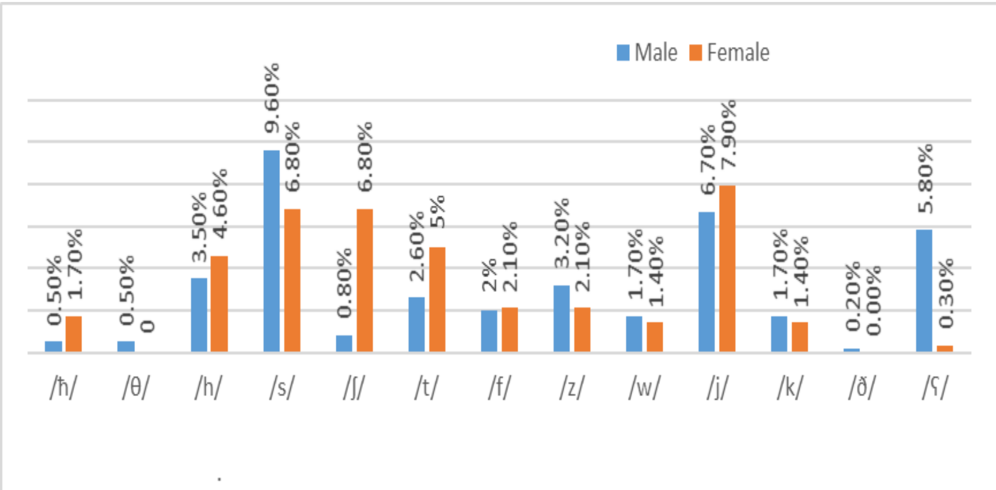

Figure 4.13: Weak sounds in male and female names

To check significance, an online chi-square test was used (Stangroom 2021). Strong vs. weak sounds in male and female names have been tested for significance ($\chi2$= (1,422) = 5.5834, p-value = .018131). It can be noted that strong sounds are found to be over represented in male names while weak sounds are overrepresented in female names. This result is consistent with the hypothesis that strong sounds are associated with strength and maleness while weak sounds are associated with femaleness.

To check the significance of each group, sounds were classified according to their manner of articulation, as this was the best way to cover the five values the test requires. The tested categories were strong stops, weak stops, strong fricatives and affricates and finally weak fricatives and affricates.

Strong stops are under-represented in female names and weak stops are more moderately over-represented, and there is a very slight effect of strong stops being over-represented in male names ($\chi2$= (3, N=298) = 23,5922. P-value=.05.).

4.5.2 Front Vowels Vs. Back Vowels in Jordanian First Names

The second sound symbolism feature that is tested in Jordanian first names is the impact of vowels. Relying on previous research (Sapir, 1929; Ohala, 1994; Klink, 2000; Newman, 1993; Wrembel, 2010) that indicates the association of front vowels with smallness, whereas back vowels are associated with largeness, the front-back vowel-contrast is traced in Jordanian first names. As figure 4.14 shows, front vowels are shown more in female names with 91% compared to 85.2% in male names.

Back vowels, on the other hand, are shown more in male names with a percentage of 10.8% compared to 6.4% in female names. The results show that the front vowels are more common in both male and female names. However, female names have more front vowels than male names while male names have more back vowels than female names; this is consistent with the front–back vowel contrast. To check significance, chi-square test was applied to front vowels only, as some values in back vowels were less than five.

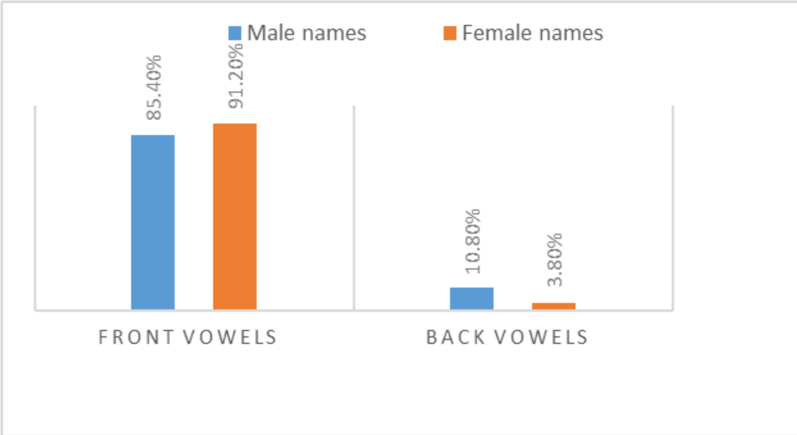

Figure 4.14: Front and back vowels in male and female names

The results showed that /i/ is over-represented in male names and under-represented in female names ($\chi2$ (3, N= 335) = 25.812 p=.00001); /ii/ and /aa/ are over-represented in female names, but the effect is not as strong.

Although not tested statistically due to small numbers, the long back vowel /uu/ is over-represented is over-represented in female names and short /u/ over-represented in male names.

4.6 Bouba-Kiki Effect in Jordanian First Names

Based on the previous research on bouba-kiki effect discussed in Chapter 2, the following features have been chosen to trace the bouba-kiki effect in Jordanian names:

1- Number of *bouba* consonants and vowels. (The voiced consonants /b/, /l/, /m/ and vowels /n/, /u, /uu/.)
2- Number of *kiki* consonants and vowels. (The voiceless stop consonants /k/, /t/, /q/, /g/ and vowels /i/, /ii/, /a/, /aa/.)

4.6.1 *Bouba* Consonants and Vowels

Table 4.17 shows that sound /m/ and /u/ are more frequent in male names, which is contrary to what is expected of *bouba* sounds. Other *bouba* sounds appear more in female names.

Table 4.17: Bouba sounds and consonants in male and female names		
	Male names %	**Female names %**
/b/	2.6	2.5
/m/	14.3	10.7
/l/	7	13.6
/n/	7.3	12.9
/u/	7.7	2.1
/uu/	3.1	4.3

Applying the chi square test to the bouba-kiki sounds reveals that the differences are not significant. However, checking bouba-kiki sounds separately, there are some suggestive trends. It was found that /l/ sound is over-represented in female names sound while the /m/ sound is over-represented in the male names.

Regarding *bouba* vowels, chi square test was not run due to the low number of /u/ instances. Table 4.18 shows that /uu/ is represented more in female names and short /u/ is represented more in male names, but the percentages are relatively close.

Table 4.18: *Bouba* vowels in male and female name		
	Male names %	**Female names %**
/u/	7.7	2.1
/uu/	3.1	4.3

4.6.2 *Kiki* Consonants and Vowels

Table 4.19 shows that *kiki* consonants are under-represented in male and female names. Short vowels /i/ and /a/ are more represented in male names

Table 4.19: *kiki* consonants and vowels in male and female names

	Male names %	Female names %
/k/	1.7	1.4
/t/	0.8	3.9
/q/	0.5	0.7
/g/	0.2	0.7
/i/	16	4.3
/ii/	9.8	19.3
/a/	36.7	30.6
/aa/	22.7	37

.

Applying chi square test, *kiki* consonants are found to be insignificant while *kiki* vowels are significant ($\chi 2$ (3, N= 335) = 25.812 p=.00001). Short vowel /i/ is over-represented in male names and under-represented in female names. Long /ii/ and /aa/ are over-represented in female names**.**

Unlike previous research that showed that there was a relationship between *bouba* with female names and kiki with male names, JA does not demonstrate this relationship. /l/ and /uu/ are the only *bouba* sounds that are found to be over represented in female names. Frequency of *kiki* consonants is not significant while *kiki* vowels are.

4.7 Conclusions

This chapter investigated the phonological patterns in male and female name in JA. It also investigated the positive phonaesthetic features of Jordanian names and the impact of sound symbolism on the phonological differences between male and female names.

Like English names, Jordanian first female names have more sonorants and vowels than male names and tend to end in open syllables. Female names are shorter than male names and contain more vowels than consonants.

Phonaesthetically speaking, both male and female names tend to have positive phonaesthetic features and avoid negative features. Sounds /l/, /m/ /n/ and /j/ are presented in male and female names with high frequency. However, female names tend to be have more positive features, as they tend to be shorter, tend to have more vowels and tend to end in vowels. Female names also have fewer of the dispreferred sounds compared to male names. Findings also show that sound symbolism is a possible factor in the phonological differences between male and female names with female names showing more front vowels and weak sounds and male names showing more back vowels and strong sounds but no significant impact of bouba-kiki effect.

Chapter 5
Adaptation of Foreign Names

5.1 Introduction

This chapter investigates the phonological adaptation of English names into JA. It focuses on the analysis of both the consonantal and the syllabic adaptations. The analysis was done to establish whether sound symbolism plays a role in the choice and adaptation of foreign names and whether the choice of foreign names follows the phonological patterns of the JA names.

This study was carried out with the hypothesis that foreign names that JA speakers chose for their newborns have similar phonological patterns of what is found to be significantly male or female name patterns, especially that some of the features that were studied in Chapter 4 have exhibited some cross-linguistics correspondence between JA and English names. It further hypothesises that, because sound symbolism has been shown to influence phonological differences between male and female names in JA, sound symbolism may influence phonological adaption of foreign names. Nevertheless, the results suggested that this is not the case.

The structure of this chapter is as follows: the first section provides an overview of the definition of phonological adaptation of loanwords and reviews previous literature on the adaptation of loanwords into JA. The second section presents the data and methodology, and the third section deals with the data analysis. The first part of the analysis deals with the segmental adaptation of foreign names, while the second part analyses supra segmental adaptation in terms of syllabic adaptation. Finally, this chapter ends with a summary and conclusions.

5.2 Adaptation of Loanwords: an Overview

Campbell (1999, p.58) defined a loanword as ‘a lexical item (a word) which has been 'borrowed' from another language, a word which originally was not part of the vocabulary of the recipient language but was adopted from some other language and made part of the borrowing language's vocabulary.’

When a loanword is introduced into another language, it may be used as if its form does not violate this language's phonological rules/ constraints. However, if the loanword's form violates any new language constraints, it is adapted to the closest acceptable form in the new language.

The term *adaptation* refers to the process of changing the phonological (and, in some cases, morphological) make-up of a loanword in the receiving language (Holden, 1972). The term *adoption* refers to the borrowing of loanwords into the recipient language while maintaining their original form and pronunciation in the donor language (Thornberg, 1980).

Campbell (1999, p. 60) explained that 'loanwords are expected to have undergone two major kinds of phonological process: (1) adaptation or phoneme substitution (segmental) and (2) accommodation (suprasegmental)'. He explained that 'in adaptation, a foreign sound in borrowed words which does not exist in the receiving language will be replaced by the nearest phonetic equivalent to it in the borrowing language.'

In the accommodation process, on the other hand, loanwords that do not fit the native phonotactic patterns are modified to fit the phonotactic patterns that are allowed in the borrowing language. Campbell (1999) added that this process is usually done by the following: deletion, addition or recombination of certain sounds to fit the structure of the borrowing language.

5.3 Adaptation of Loanwords into JA

Jordanian Arabic has borrowed many words from several languages, especially English, with which it has had a long history of contact. These new words have undergone adaptation with the challenge to maintain the source pronunciation and simultaneously satisfy Jordanian Arabic phonological constraints.

Several studies have recently investigated the adaptation of loan words in Jordanian Arabic within the main two types of adaptation: segmental and suprasegmental adaptation, corresponding to Campbell's classification as adaptation and accommodation, respectively; some of these are Alomoush and AlFaqara (2010), Abu Guba (2016) Salem (2015) and Sa'aida (2015).

Salem (2015), in his study of loanwords in Jordanian Arabic, stated that the previous research of loanwords in JA demonstrated that these words undergo phonological processes. He explained these processes as

> 'replacement of foreign phonemes (e.g., /v/ → /f/ 'receiver' > risīfar), vowel shortening and lengthening (e.g., 'microphone' > makrafōn), segment insertion (e.g., 'scrap' > sikrāb), and segment substitution (e.g., /e/ → /i/ 'sex' > sikis) '(Salem, 2015, p. 99).

According to Al-Qinai (2000), consonant change, vowel change, and epenthesis of vowels and syllables are three key integration processes that loanwords from different languages go through when they enter Arabic.

Salem (2015) used Al-Qinai's classification of phonological change that loan words in Arabic undergo to investigate the phonological integration of loan words in JA. This classification is used as the basis for patterns of phonological adaptation of loanwords in the current study.

5.4 Data and Methodology

Foreign names are increasingly used in Jordan nowadays, especially for baby girls such as *Christine*, *Ellen*, *Rachel*, *Celine* etc. These names undergo phonological modifications to fit into the Arabic phonological patterns.

This section investigates the phonological modification of these English names into JA. To study the phonological adaptation of foreign names used in Jordan, a list of foreign names was collected anecdotally by asking JA speakers about some of the foreign names they have heard recently. Some names were ruled out because they are not common English names, according to some native speakers who were shown the list.

Three groups of respondents took part in this study. The first group consist of three native speakers of English; all are colleagues at the school of English at the University of Sussex. The second and the third groups comprised of five Jordanians each. The second group of respondents have good English Language proficiency. All five respondents hold a master's degree in Linguistics or Applied linguistics; among these speakers, there are three who have direct contact with native speakers, two of whom have lived outside Jordan (one in the USA and the other in the UK). The third group of respondents have little or no English Language proficiency. All the respondents are family members and friends.

As the data collection involves personal contact, the participants were not anonymous to the researcher. However, their responses were treated with anonymity and confidentiality. They also were informed that their personal details would remain anonymous and confidential. An information sheet and consent form were sent to the participants before the list of names for ethical purposes (see Appendix 2 and 3).

A list of 40 English names was sent to all participants through WhatsApp. They were asked to read the names first, then record a voice message while reading the names and send it back to the researcher as a voice message through WhatsApp. I then transcribed the pronunciation of the names using the IPA symbols for analysis (see Appendices 4,5, and 6) and ran a comparison between the pronunciation of native speakers of these names and the JA speakers' pronunciation. The pronunciation of the three native speaker participants was almost the same for the majority of names; when there was a difference, the clearest pronunciation of one of the participants was used. It is worth mentioning that it was difficult for some speakers with no or low English proficiency to read some of the names in the English language. As a result, I contacted the Civil Service Bureau to get the official Arabic spelling of these names as registered officially.

5.6 Data Analysis

The data analysis framework was adopted from previous research on loanwords by Salem (2015) and Abu Guba (2016). The names under study have been transcribed using the IPA symbols. This section includes two main parts: a segmental adaptation that includes consonantal and vocalic change and suprasegmental adaptation that includes the syllabic adaptation.

5.6.1 Segmental Adaptation

5.6.1.1 Consonant Change

This part deals with the substitution of English consonants that do not exist in JA consonantal inventory or even the substitution of consonants that are part of JA consonantal inventory. As explained earlier, the English phonemes /p/, /ʧ/, /v/, and /g/ do not exist in MSA. Nevertheless, the phonemes /ʧ/ and /g/ exist in JA, mainly rural and Bedouin dialect.

Salem (2015) indicated that Arabic phonemes substitute each foreign sound, such as /ʧ/ is substituted by /ʃ/, /g/ by /ʤ/, /v/ by /f/, and /p/ by /b/. In addition, /ʧ/ and /g/ are sometimes realised without adaptation. This can be analysed in the Table 5.1.

Table 5.1: JA realisation of English consonants

Category	English Phoneme	JA realisation
Plosive	/p/	/b/
Affricate	/ʧ/	/ʧ/ , /ʃ/
Fricative	/v/	/f/
Velar	/g/	/ʤ/, /k/, /g/

5.6.1.1.2 The Voicing of English /p/ into JA /b/

Previous research on loanwords states that the phoneme /p/ in loanwords is found in two forms: /b/ and /p/, depending on the speaker of the word (Salem, 2015).

Table 5.2 shows that speakers with no or little English proficiency tended to substitute the voiceless /p/ that does not exist in JA into its nearest counterpart, the voiced /b/.

Table 5.2: Adaptation of /p/ in JA				
Participants	**Occurrence**	**/b/**	**/p/**	**Percentage**
JA speakers with good English proficiency	10	5	5	50%
JA speakers who speak no or little English	10	10	0	100%

Names *Paula* /pɔːlə/ and *Peter* /piːtə/ are pronounced /bawlaa / and / biitaɾ/ respectively in most cases. On the other hand, among the speakers with good English proficiency, it is found that in 50% of the occurrences of /p/, it has been adapted into /b/ while 50% used the English voiceless /p/.

5.6.1.1.2 Devoicing of English /v/ into JA /f/

According to Salem (2015), in most cases of established loanwords, the /v/ phoneme is retained when spoken and replaced by /f/ when written. He explained that this is due to the fact that some spoken varieties have the phoneme sound /v/ in their inventory. For the names under study, as table 5.3 shows, the English voiced labiodental fricative /v/ is rendered as /f/ in with 4% of the time by speakers of good English proficiency and a percentage of 60% by speakers with no or little English.

Table 5.3: Adaptation of /v/ into JA				
Participants	**Occurrence**	**/f/**	**/v/**	**Adaptation Percentage**
JA speakers with good English proficiency	25	1	24	4%
JA speakers who speak no or little English	25	15	10	60%

Names containing the /v/ sound as: *Veronica* /vərɒnɪkə/, *Vivian* /vɪvɪən/, *Victor* /vɪktə/ are, in most occurrences with speakers with no English background, pronounced as: /fiɾoonikaa/, /fifjaan/ and /fiktuɾ/, respectively in most cases.

It is worth mentioning that the name *Oliver* /ɒlɪvə/ has been pronounced with the phoneme sound /v/ in all the occurrences, although other names that have the sound /v/ in syllable onset position word-initially as in /vɪvɪən/ and syllable onset word medially position as in /ɒlɪvɪə/ are pronounced by Jordanian participants as /f/ in many occurrences.

Respondents were asked if they know someone who is called *Oliver* or if the name relates to them. All the Jordanian participants said they know someone who is called *Oliver* besides that this name reminds them of one of their childhood favourite cartoon *Sandy Bell*. *Sandy Bell* had a dog whose name was *Oliver*. This cartoon was dubbed into Arabic, keeping the same names with the same pronunciation. Some of the participants have also indicated that they have watched the movie 'Oliver Twist', based on the novel by Charles Dickens. This movie has been shown on Arabic movie channels with Arabic subtitles. However, the name was easily recognized as it is pronounced during the movie. Nevertheless, minor syllable structure and vowels change can be traced in the pronunciation of this name. This is to be discussed later.

5.6.1.1.3 The Adaptation of the Voiced Velar Stop /g/

Although the phoneme /g/ is missing in MSA, it exists in spoken JA. Salem (2015) pointed out that most spontaneous loanwords retain their /g/ phoneme. As for the names under study, it is found that in all the occurrences of the sound phoneme /g/ it is retained /g/. The name *Gabriel* /geɪbɹɪəl/ is pronounced as /gabɾijil/ or /gaabɾeel/ in most cases.

5.6.1.1.4 The Adaptation of Voiceless Palatal Affricate /ʧ/

The sound phoneme /ʧ/ is also absent in MSA but exists in some spoken varieties of JA, particularly rural and Bedouin dialects. Al-Sughayer (1990, p.242) stated: 'In JA /ʧ/ corresponds to MSA /k/…JA has also [k].'

For the names under study here, the sound /ʧ/ appears in two names; /ʧɑ:li/ and /ɹeɪʧəl/. For speakers with good English proficiency, as Table 5.4 shows, in 70% of the occurrences, the /ʧ/ is retained as /ʧ/ while with speakers with no English proficiency, in 80% of the occurrences, the /ʧ/ sound is adapted into /ʃ/. It seems that spelling plays a role in this process. The two names, Charley and Rachel, were challenging to pronounce for the speakers with low English proficiency, the official Arabic spelling for these names, as taken from the official record of the Jordanian Civil Service Bureau, shows that these names are spelt in Arabic Language as 'راشيل' *Rasheel* and 'شارلي' *Sharly*. This leads speakers who use the Arabic spelling of the names to pronounce the /ʧ/ sound as /ʃ/ as it is spelled in the list.

Table 5.4: Adaptation of / ʧ / into JA				
	Occurrence	**/ʧ/**	**/ʃ/**	**Adaptation Percentage**
Speakers with good English proficiency	10	7	3	30%
Speakers with no English proficiency	10	2	8	80%

5.6.1.2 Vowel Change

Vowels of foreign names are affected, just like those in loanwords, by phonological adaptation of these names into JA in terms of vowel substitution or lengthening.

The vowels, /ɛ/, /ɒ/, and /ɔː/ and the diphthongs /əʊ/, /eɪ/, and /aɪ/ do not exist in JA.

Salem (2015) found that there is a preference of the Arabic /i/ over the foreign /ɛ/ in integrating loanwords, A preference of /u/ and /oo/ over /ɒ/ and /ɔː/ is also common, where /ɒ/, and /ɔː/ are substituted by /oo/ in the spoken variety or /u/ in MSA. Regarding diphthongs, he added that when the diphthong is located in a final syllable, it is likely to be substituted with a long vowel. The diphthong /əʊ/ tends to be rendered as /oo/ or /uu/; the /aɪ/ and /eɪ/ diphthongs tend to be substituted by long vowels, e.g., dictator > /diktaatoor/.

5.6.1.2.1 Adaptation of / ɪ/

The short high front vowel /ɪ/ appears 50 times in each group of Jordanian participants. As Table 5.5 shows, in the majority of these cases /ɪ/ is retained as the short high front vowel /i/ in JA.

Table 5.5: Adaptation of /ɪ/

Participants	Occurrences	/i/	/ii/	/ee/
JA speakers with good English proficiency	50	100%	0.0%	0.0%
JA speakers who speak no or little English	50	58%	40%	2%

It is lengthened as /ii/ in 40% of the cases only among speakers with no or little English proficiency as in /viɾooniika/, /ʔooliivjaa/ and /ɾoobiin/. It is also adapted into JA as /ee/ in just one case with one of the speakers in /ɾoobeen/. This shows that when /ɪ/ is lengthened, it keeps the quality features as much as possible. Most of these cases have stress on the lengthened vowel, this could relate to markedness principles that prefer stressed syllables to be heavy. As explained by Abu Guba (2016, p. 127) 'this is a cross-linguistic markedness constraint that lengthens stressed syllables'.

5.6.1.1.2.3 Adaptation of /ɛ/

The /ɛ/ does not exist in JA. It is raised to the phonologically closest JA counterpart /i/ with a percentage of 30% among speakers with no English proficiency and 65% among speakers with good English proficiency. As Table 5.6 shows, it is lengthened to /ii/ in 40% of cases among speakers with no English proficiency and 15% among speakers with good English proficiency. It is also lengthened to /ee/ as in /maadleen/ in two cases. It is also lowered to /a/ in 30% and 10% of cases among speakers with no English proficiency and speakers with good English proficiency, respectively.

Table 5.6: Adaptation of /ɛ/					
Participants	**Occurrences**	**/i/**	**/ii/**	**/a/**	**/ee/**
JA speakers with good English proficiency	40	65%	15%	10%	10%
JA speakers who speak no or little English	40	30%	40%	30%	0.0%

5.6.1.1.2.4 Adaptation of /ɒ/

Among speakers with no English proficiency, the /ɒ/ is lengthened to /oo/ in all of the occurrences with a percentage of 100%. It is also lengthened to /oo/ among 50% of cases with good English proficiency while adapted to its closest JA phoneme, /u/, in 50% of the cases.

5.6.1.1.2.5 Adaptation of /ə/

The schwa is adapted to the closest JA phoneme which is the low front short vowel /a/ in 50% of the cases for Jordanians with good English background such as /maaɾθa/, /sandɾa/, /dajana/. As Table 5.7 shows, It is also adapted as long /ii/ or as long front vowel /aa/ as in /ʤasikaa/, /ɾajaan/, It is backed and rounded in some cases to /u/ or /oo/ as in /siimoon/ and /sajmun/. It is also adapted as /ee/ in /danjeel/.

Table 5.7: Adaptation of /ə/									
Participants	**Occurrences**	**/i/**	**/ii/**	**/aa/**	**/u/**	**/uu/**	**/oo/**	**/a/**	**/ee/**
JA speakers with good English proficiency	120	19%	11%	4%	6%	1%	5%	50%	4%
JA speakers who speak no or little English	120	9%	16%	26%	2%	0.0	13%	30%	1%

The result appears to be consistent with adaptation among speakers with no English proficiency. It is worth mentioning that all the speakers of this group pronounce the name *Eleanor* as either /ʔaljaanooɾ/ or /ʔiljaanooɾ/ in which they adapt the /ə/ in the second syllable by adding the glide /j/ and /aa/.

5.6.1.1.2.6 Adaptation of /u:/

Despite the fact that JA has the high long back vowel /uu/, only 30% of the cases with speakers with English of good English proficiency and only 10% of those with no English proficiency adapted this vowel into /uu/. Table 5.8 shows that in majority of cases the English long vowel /u:/ is lowered to /oo/ as in: /ʔandɾoo/ and /ɾoobɪn/.

Table 5.8: Adaptation of /u:/

Participants	Occurrences	/uu/	/oo/
JA speakers with good English proficiency	10	30%	70%
JA speakers who speak no or little English	10	10%	90%

5.6.1.1.2.7 Adaptation of /ɔː/

In all the cases for names under study, the mid long vowel /ɔː/ is adapted into the Arabic diphthong /aw/ as in / bawla/, i.e. /pɔːlə/.

5.6.1.1.2.8 Adaptation of Diphthong /ɪə/

This diphthong appears in three names among the list under study, /geɪbrɪəl/ and / ɒlɪvɪə/.[17] With both groups of Jordanian participants, this diphthong has been adapted as a glide /j/ followed by long vowel /aa/ or short vowel /a/ or /ii/, as in /gabɾijal/, /gabɾijiil/, /ʔoolivjaa/ and /ʔoolifjaa/. As stated earlier onset-less syllable is not allowed in MSA or JA, The glide /j/ is used to resolve the onset-less syllable.

5.6.1.1.2.9 Adaptation of Diphthong /eɪ/

Among speakers with low English proficiency, as Table 5.9 shows, in only 5% of cases, the diphthong /eɪ/ is adapted into its closest JA realization /ee/ as in /ʔadeel/. In 55% of the cases it is adapted as /aa/ as in /ɾaaʃiil/ and /gaabɾijeel/. In some other cases, it is shortened to /i/ with some speakers as in /ʔadil/.

[17] Some English speakers pronounce these names with a glide.

Table 5.9: Adaptation of diphthong /eɪ/						
Participants	**Occurrences**	**/ee/**	**/ii/**	**/i/**	**/aa/**	**/a/**
JA speakers with good English proficiency	20	55%	5%	-	25%	15%
JA speakers who speak no or little English	20	5%	10%	10%	55%	20%

On the other hand, majority of speakers with good English adapted /eɪ/ to its closest Jordanian counterpart /ee/, while some adapted it to /aa/ as in /gaabrijal/ while it was adapted into /ii/ just in one case.

5.6.1.1.2.10 Adaptation of /aɪ/

The diphthong /aɪ/ is adapted as /ii/ as in /ʔiila/ and /siimoon/ in 80% of the occurrences among speakers with no English proficiency and 60% among speakers with good English proficiency. As shown in Table 5.10, in some other cases it is adapted into the closest Arabic diphthong /aj/, as in /ʔajlaa/ and /sajmoon/ or /ee/ as in /ʔeelaa/.

Table 5.10: Adaptation of /aɪ /				
Participants	**Occurrences**	**/ee/**	**/aj/**	**/ii/**
JA Speakers with good English proficiency	10	-	40%	60%
JA speakers who speak no or little English	10	10%	10%	80%

It is worth mentioning that spelling has a role in the adaptation of this diphthong, especially with the name *Isla*. The name was difficult to pronounce for the speakers with low English proficiency and even for some of the speakers with good English proficiency as the *s* is silent. The official Arabic spelling for this name, as taken from official record of the Jordanian Civil Service Bureau, shows that it is spelt as ايلا without any diacritic reference that gives a clue to the correct pronunciation neither /ʔi/ or /ʔa/.

5.6.1.1.2.11 Adaptation of /əʊ/

In the majority of cases, the diphthong is adapted to its closest JA counterpart /oo/ as in /ʤoozeef/ with both groups of Jordanian speakers. In just two occurrences with speakers with good English proficiency, it is adapted as long vowel /uu/ as in /ʤuuziif/.

5.6.2 Supra Segmental Adaptation

Syllable structural adaptations, or more broadly, phonotactic adaptations, and stress and tone adaptations are the two main types of supra-segmental adaptations. The first type is of particular importance in the current study and is presented in the following section.

5.6.2.1 Syllabic Adaptation

This section explores some phonological processes for repairing syllable structure in foreign names. In general, a number of phonological processes such as vowel shortening, vowel lengthening, deletion and epenthesis are attested in previous research to repair syllable structure. The two most common processes observed in the foreign names under study are vowel lengthening and epenthesis.

5.6.2.1.1 Vowel Lengthening

Vowel lengthening is a process that preserves the JA syllable structure in loanwords.
As explained in Chapter 3, a final syllable in JA is never stressed unless it is super heavy, and the penultimate is stressed if it is heavy. Therefore, a long vowel in ultimate or penultimate syllable attracts stress, which demonstrates that 'vowel lengthening in loanwords indicates a case of stress shift' (Salem, 2005, p. 104).

The following examples show cases of vowel lengthening of English names when adapted to JA in which these vowels attract stress:

a. CVV CVVC: /ɾuu.ˈbiin/ , / ɾaa.ˈjaan/
b. CVC CVVC: /mad.ˈliin/, /dan.ˈjaal/, /ʤak.ˈliin/

5.6.2.2 Addition (Epenthesis)

As explained in Chapter 3, in contrast to English, which offers a wide range of syllable sequences, the syllable structure in JA is limited to eight syllable patterns and does not permit onset-less syllables. The syllable sequences in JA are CV, CVV, CVC, CVVC, CVCC, CVVCC, CCVC and CCVVC. In this sense, an English name with initial vowels or consonants clusters is prohibited and will need to be repaired.

Epenthesis is the insertion of a sound or a syllable, usually to satisfy a phonological constraint. There are two main reasons for epenthesis in loanwords used in MSA. The first reason is to resolve the onset-less syllable, and the second is to avoid consonant clusters. To resolve the problem of onset-less syllables, two consonants maybe added namely, glottal stop /ʔ/ or glide /j/; the glottal stop shows up word-initially, and the glide syllable-initially but not word-initially as follows:

a. Glottal stop
   - /ʔiliin/ for /ɛlən/
   - /ʔaliis/ for /æləs/
   - /ʔadeel/ for /ədeɪl/
   - /ʔoolivjaa/ for /ɒlɪvɪə/
   - /ʔoolivaaɾ/ for /ɒlɪvə/
b. Glide /j/
   - /gab.ɾi.jal/
   - /ʔoo.liv.jaa/

Regarding consonant clusters, according to Al-Qinai (2000), Arabs insert a vowel or add an additional syllable consisting of a glottal stop /ʔ/ and a short vowel to overcome such constraints. JA, unlike MSA, allows consonant clusters word initially as in /ktaab/ book. However, it has been found that in some cases speakers tend to break the initial cluster by adding a glottal stop followed by /i/ as in: /ʔikɾistiina/, /ʔikɾistiin/.

With the name Diana, all the speakers with no English background pronounced as /ʔidjaanaa/. This name, as written in Arabic, begins with /d/ followed by /j/ ‘ديانا’ which has a consonant cluster too. JA Speakers with no English background tend to break the cluster by adding the glottal stop /ʔ/ followed by /i/.

5.8 Phonological Patterns and Sound Symbolism Impact on the Choice and Adaptation of Foreign Names

The choice and adaptation of foreign names does not reflect any impact of sound symbolism or the phonological patterns of JA names. Female names that were chosen are relatively long with more syllables, which is consistent with English female names but not with JA names as found in the analysis in Chapter 4. Male-weighted features and female-weighted features that found to be significant in JA names appear in relatively similar occurrences in both male and female foreign names. The same applies to sound symbolism features. Weak and strong sounds seem to occur in male and female name. Weak sound /s/ appears in both male and female names and strong sound /ɾ/ is commonly used in the male and female names with similar number of occurrences.

To check the impact of phonological patterns and sound symbolic features of JA on the adaptation of foreign names, I analysed the sounds that have a JA counterpart and yet were adapted into another sounds.

The short vowel /ɪ/ was adapted into /ii/ in majority of the occurrences although JA has a short vowel /i/. Although that the long vowel /ii/ syllable-finally is a female name feature (based on table 4.9), the adaptation of the /ɪ/ into /ii/ cannot be attributed to the impact of phonological patterns of JA names. Short vowel /ɪ/ was adapted into /ii/ in syllable-final position in female names as in /ʔooliivjaa/ and /anʤiliina/. However, it was also adapted into /ii/ in male and female names and its occurrence was not restricted to syllable-final positions, such as /ɾoobiin/ and /maadliin/. Despite the fact that JA has the high long back vowel /uu/, in the majority of cases the English long vowel /u:/ was adapted into /oo/ as in: /ʔandɾoo/ and /ɾoobɪn/. /oo/ appeared more in female names but the difference was found not to be significant and this sound was not classified as male or female name feature. The patterns of adaptation of JA names seem to be determined by the phonological processes other than sound symbolism.

5.7 Conclusions

This chapter investigated the phonological adaptation of foreign names that are used in JA. Analysis of names under study shows that names undergo two main process: segmental and suprasegmental adaptation. Adaptation of foreign names into JA shows similar results of the previous research about the adaptation of loan words in JA. Consonants that do not exist in JA inventory like /p/, /v/ are adapted into their closest JA counterpart. Other sounds that are part of JA inventory but do not exist in MSA, like /ʧ/ is found to be adapted as either /ʧ/ or /ʃ/. Regarding vowel change, as JA has only three short vowels and their long counterpart besides two diphthongs, vowels and diphthongs in foreign names are adapted into their closest JA counterpart. Short vowels, especially in the final position, are lengthened to preserve the structure of the Arabic syllable, which determines the stress location in Arabic. Syllable structure constraints also play a role in the process. Onset less syllable is not allowed in JA , this is resolved by adding a glottal stop /ʔ/ followed by a short vowel /i/ or /a/ as in /ʔiliin/ or glide /j/ as in /gab.ɾi.jal/.

Results also show that there is a higher tendency with speakers with good English proficiency, comparing with those with low English proficiency, to retain the original vowels and consonants. However, they still adapt the sounds into their closest JA counterparts in many instances, especially regarding vowels. Results also show that although some sounds exist in JA but yet still be adapted into another JA sound other than the original one.

Results also revealed that the choice and the adaptation of foreign names do not reflect any impact of sound symbolism or phonological patterns of JA names that were discussed in the previous chapter. Significant male-weighted features and female-weighted features in JA names appear in relatively similar occurrences in both male and female foreign names. In regards of the impact of sound symbolism, weak and strong sounds seem to occur in male and female names. Other considerations outweighed phonological and sound symbolic features in the choice and adaptation of foreign names.

Chapter 6

Rural Dialect Speakers' Perception of Names

6.1 Introduction

This chapter aims to explain in detail the perception of the phonology of names by Jordanian Arabic speakers. It also explores two relationships in the data: (1) whether participants can assign gender to the names relying on their phonology, and (2) whether there is any link between how many gender-identified segments a name has and how it is rated preferably in terms of attractiveness.

I hypothesise that:

1- The gendered categorisation of pseudonames can be predicted based on their phonology
2- Names that have more male-associated or female-associated features are evaluated more positively.

To this end, a list of pseudonames was created relying on the findings of the analysis in Chapter 4 of the top 100 female first names and top 100 male first names. A sample of JA and English native speakers were asked to assign the pseudonames to male or female gender in an online questionnaire.

The first part of this chapter explains the way the pseudonames were created. The second part illustrates the data collection and method and includes the questionnaire's design and distribution. The third part of the chapter presents the analysis of the questionnaire responses from the rural dialect speakers (henceforth RDS) responses. Responses of non-RDS speakers and English speakers will be addressed in Chapter 7.

6.2 Pseudonames

Following the analysis in Chapter 4, a list of male and female name features was identified along with features of neutral names. The list was previously presented in Table 4.9.

Studies that employ pseudonames provide some of the most compelling evidence for significant phonological clues to gender (Cassidy et al., 1999; Whissell, 2001; Auracher, 2017; Nielsen and Rendal, 2011). It is believed that participants will rely on phonology in the absence of any other information about a word to infer that word's meaning or grammatical function or the gender it refers to (Fredrickson, 2007).

Pseudonames in previous research were created as contrastive pairs of pseudowords that differed only in their vowel (Sapir, 1929), stress patterns, final phoneme, and the number of syllables (Cassidy et al., 1999; Whissell, 2001). In this study, I chose to create gender-neutral pseudonames. Then I used these pseudonames to create male-weighted or female–weighted pseudonames that differ in name-initial, syllable-initial, syllable-final, name-final, vowels and syllable structure. Finally, I created heavily male-weighted and heavily female-weighted pseudonames by changing all the neutral pseudoname features to test the hypothesis that names created with changing all features would be preferred. The notion of creating gender-neutral pseudonames and heavily gender-weighted pseudonames has not been applied in previous research.

Relying on Table 4.9, five neutral pseudonames were created. In the creation of these pseudonames, I used only segments and syllable structures that were not associated in the previous analysis with either male or female names. These names were then used to create female-sounding and male-sounding names. Each name was used to create around five male names and five female names (in some cases, six names), changing one feature of the original neutral name. This process is shown in figure 6.1.

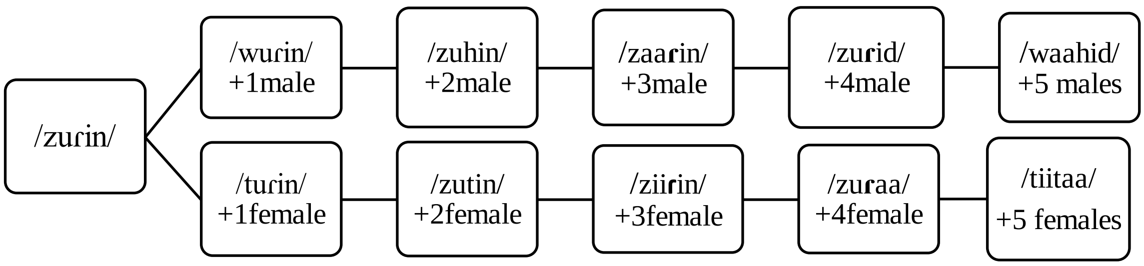

Figure 6.1: Pseudoname creation process for neutral name /zuɾin/

As Table 6.1 shows, /zuɾin/ is the neutral pseudoname. Five male and five female pseudonames were created by changing one of the phonological features of the name.

The features are name-initial sound, syllable-initial sound, syllable-final sound and name-final.

Table 6.1: Neutral name /zuɾin/			
	Feature	**Male name**	**Female name**
1-	Name-initial	/wuɾin/	/tuɾin/
2-	Syllable-initial	/zuhin/	/zutin/
3-	Syllable-final	/zaaɾin/	/ziiɾin/
4-	Name-final	/zuɾid/	/zuɾaa/
5-	All features	/waahid/	/tiitaa/

For the first feature, name-initial, the neutral name-initial sound was changed, choosing one of the sounds found to be significantly male or female name-initially. Sound /z/ in /zuɾin/ was changed into /w/ to create a new, male-sounding name, /wuɾin/ and into /t/ to create a new female-sounding name /tuɾin/.

The second feature that the table above demonstrates is the syllable-initial sounds. The neutral name /zuɾin/ was made up of two syllables /zu.ɾin/. The first syllable-initial /z/ was changed according to name initial feature (as explained above). The second syllable-initial /ɾ/ was changed to /h/ in male name to create the male name /zuhin/ and changed into /t/ to create the female name /zutin/. Regarding the third feature, the first syllable-final /u/ was changed into /aa/ to create the male name /zaaɾin/ and into /ii/ to create the female name /ziiɾin/. The second syllable-final /n/ was treated as a name final. It was changed into /d/ to create the male name /zuɾid/ and into /aa/ to create the female name /zuɾaa/. While the new names in 1, 2, 3, and 4 include only one of the significant male or female names features, the last row in the table shows names that have had all the features changed to be heavily gender-weighted. Changing all the previous features, heavily male-weighted name /waahid/ and heavily female-weighted name /tiitaa/ were created.

Choosing to create names that are partially male or female names is a step towards testing a hypothesis that participants will tend to choose the names that were created by using only male/female-sounding features, i.e. heavily female-weighted names or heavily male-weighted names, with more preferences compared to the names that were created by changing only one feature. The complete list of the neutral names and the gender-weighted pseudonames derived from them is included in Appendix 7. It is worth mentioning some features were not applied to all names as this resulted in creating names that are familiar in Arabic. The names /faaki/, /kiisaaf/ and /naasiɾ/ appeared twice in the pseudoname list, one due to changing the vowels and the other for changing the first syllable-final of the neutral name /fuuki/, /kunsaaf/ and /nuusiɾ/.

Previous researchers (Cassidy et al., 1999; Whissell, 2001) did not consider the impact of the similarity between the pseudonames they created and actual English names on the gender inferences. They expected that participants would make gender inferences only based on name phonology because they were given unfamiliar pseudonames – that is, names they had never encountered before. Cassidy et al. (1999) used the pseudonames *Corla* and *Steban*, which seems similar to the recognizable names *Carla* and *Stephen.* Whissell (2001) also created the pseudoname *Meja*, which seems similar to the actual name *Maya*. The extent to which this resemblance influenced speaker judgment was not tested, but this can question the findings. To avoid similar consequences, I reviewed the pseudonames for any associations they might have with other JA names and replaced many pseudonames that seemed too familiar to JA speakers. If a pseudoname has only one sound difference from an actual Jordanian name, it was ruled out.

However, three pseudonames in the questionnaire were chosen for the purpose of testing if the participants will assign the gender of the names relying on their previous knowledge of a similar name. The female-weighted name /ʃiimaah/ is similar to the Arabic name /ʃajmaaʔ/, the female-weighted name /biijaan/ is similar to the Arabic name /bajaan/ and the male-weighted name /naasiɾ/ is similar to the Arabic male name /naasˤiɾ/. It was found that such similarity did not impact assigning the pseudonames to their gender; this impact is discussed in section 6.4.1.2.

It is also worth mentioning that I introduced an improved gender classification model that works on the pronunciation of the pseudonames rather than written words. This was done to avoid the limitation of previous research that tested phonological interpretations of the written names (Mueller and Stumme, 2016; Cassidy et al., 1999; Whissell, 2001).

6.2.1 Data Collection and Method

An online questionnaire (see appendix 8 for the link) was designed to test the following hypotheses:

1. Gender categorization of names can be predicted relying on their phonology.
2. Names that have more male-associated or female-associated features are evaluated more positively

The questionnaire also answers one other research question, which is whether there are similar associations between JA and English native speakers regarding sound patterns in names. This is tested in Chapter 7.

6.2.2 Design and Sections of the Questionnaire

The questionnaire is made up of four sections. The first section elicits biographical data about the participants: age, gender, nationality and dialect they speak (Urban, Rural, Bedouin). English native speakers' responses to the dialect they speak were disregarded as they were not relevant to the purpose of this study.

In the second section, participants were asked to listen to a list of pseudonames and decide whether the name they heard sounded like a boy's name or a girl's name. Fifty-eight names were recorded and appeared in the questionnaire in pairs. Each pair included two names that were derived from the same neutral pseudoname, one referred to a male-weighted name while the other referred to a female-weighted name. Names that were derived from the same pseudonames were not listed following each other. Instead, sets were randomly chosen from different name groups. The order of names (male or female) in each set was also randomly set to distract participants' attention from following a pattern in choosing their answers. 'Neither male nor female' was also added as a third choice as a perceptual option to allow participants to rate some names as not markedly masculine or feminine. Participants were given the option to click back and change their answers (if they want to) within the same set.

The third section of the questionnaire was divided into two parts, male-weighted names and female-weighted names. Participants were asked to choose a name they would prefer as their own son's or daughter's name (see section 6.4.2)

In the fourth section, participants were asked to write their top 5 favourite male names and top 5 favourite female names. In choosing their top 5 favourite male names, participants were asked to pick names other than names beginning with *Abd* ('servant/servant of') combined with one of the names of Allah ('God') and the name *Ahmad* and *Mohammad* (names of the prophet). This part was created to check if the original data used, the top most common names in Jordan in 2017, represented the participants' preferences of male names and to check phonological feature similarities between the preferred real names and the preferred pseudonames, while attempting to control for some of the cultural associations that might strongly influence participants' preference.

6.2.3 Distribution of the Questionnaire

According to the Department of Population and Social Statistics, the latest population Estimated of the Hashemite Kingdom of Jordan in 2018 was 10,309,000. As this study aims to investigate the phonological features of male and female names in JA, particularly the rural dialect spoken in suburbs of Irbid governorate (northern Jordan), the population of Irbid governorate is used as the total population size to calculate the ideal sample size.

According to the Jordanian Department of Statistics, in 2018, Irbid had a population of 1,911,600. 48.3% are females, and 51.6% are males. With a confidence level of 95% and a margin of error of 8%, the estimated ideal sample is 150 participants (Qualtrics, 2019). The questionnaire was distributed online using social media networks (Facebook, WhatsApp, Instagram and Twitter).

6.3 Analysis of the Questionnaire

This section starts with the general statistics of the participants who took part in the questionnaire in regard to the number of the participants, nationalities, dialect, gender and their age group. The second part analyses the main participants of the questionnaire; RDS participants' responses.

6.3.1 General Statistics

The following part shows general statistics of all participants who took part in the questionnaire. It includes two parts: nationality and gender.

6.3.1.1 Nationality

The nationalities of the participants are shown in Table 6.2.The majority are Jordanian Arabic speakers who are the main interest of the study.

Table 6.2: Number and nationalities of participants

Nationality	**Number**
Jordanian	298
English	17
Other	27
Total	342

Table 6.3: Nationalities of participants (other than English or Jordanian)

Nationality	**Number**
Saudi	15
Syrian	7
Sudanese	1
Bahraini	1
Lebanese	1
Australian	1
Palestinian	1

Regarding the other nationalities, table 6.3 shows the nationalities of the participants of non-Jordanian and non-English nationalities.

6.3.1.2 Gender

Figures 6.2 and 6.3 summarize the gender and the age group of the participants. It is worth noting that more females responded to the survey, and the majority of the participants belong to the age group 16-25.

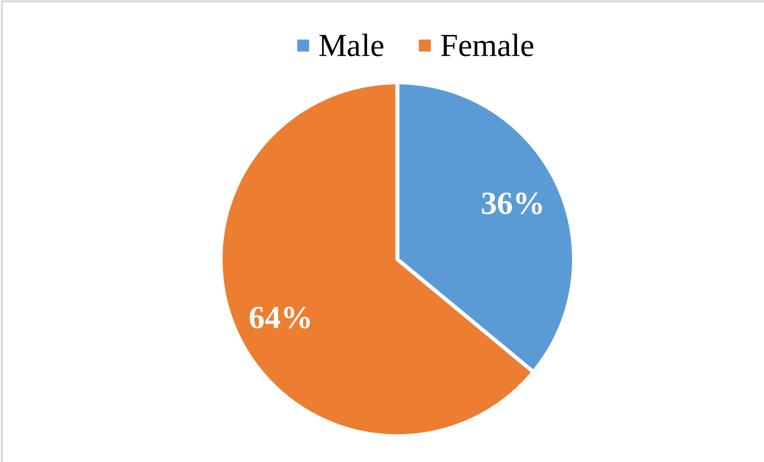

Figure 6.2: Gender of all participants

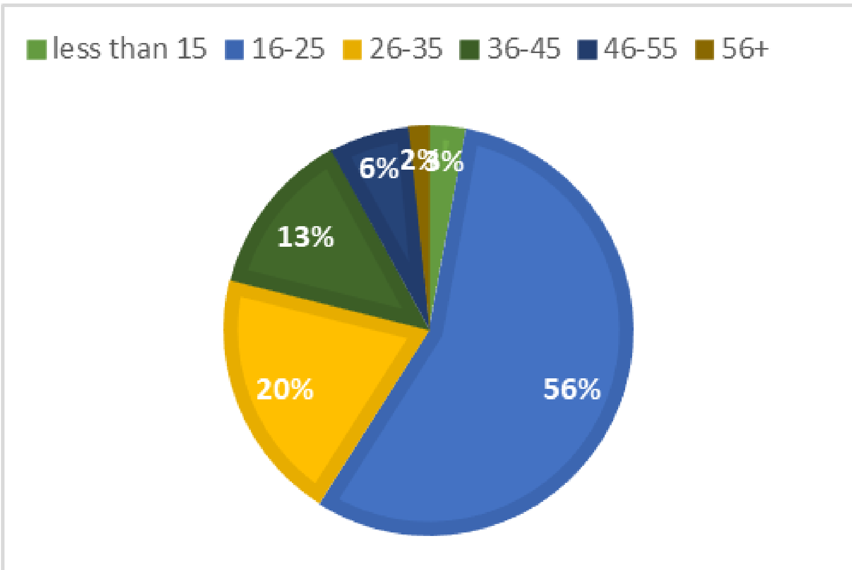

Figure 6.3: Age groups of all participants

6.3.2 Jordanian Participants

This section shows general statistics of the Jordanian participants. It shows the dialect spoken, gender and age group of the Jordanian participants.

Among 298 of the Jordanian participants, figures 6.4 and 6.5 show that majority of the participants were female, and regarding the age group, the majority belong to the age group 16-25.

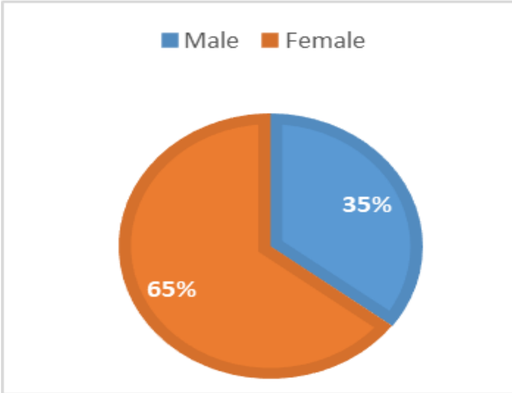

Figure 6.4: Gender of the Jordanian participants

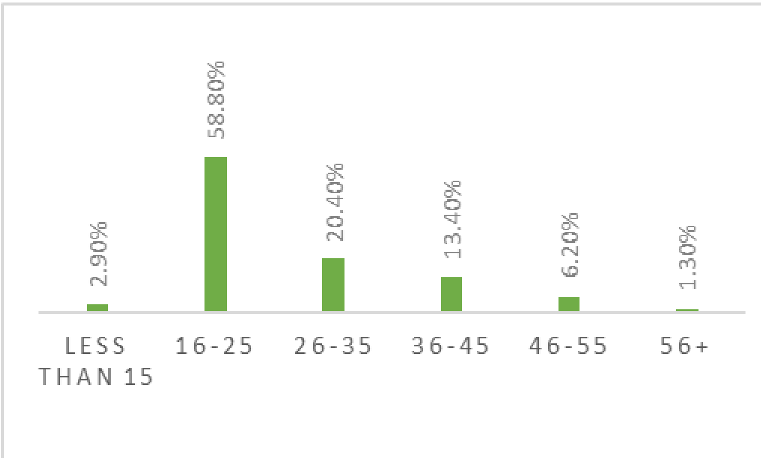

Figure 6.5: Age group of Jordanian participants

Regarding the dialects spoken by the Jordanian participants, figure 6.6 shows that the majority, 60%, are rural dialect speakers, 38% are Urban dialect speakers and only 2% are Bedouin dialect speakers.

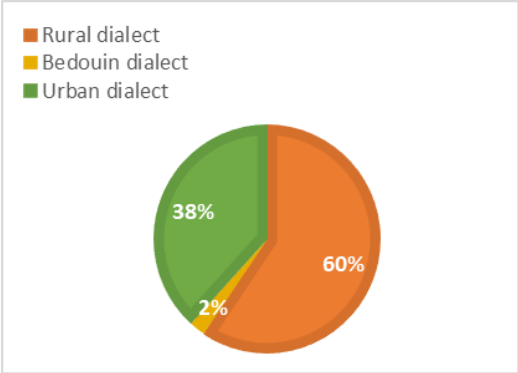

Figure 6.6: Jordanian participants' dialects

6.3.2.1 Rural Dialect Speaking (RDS) Participants

The primary sample of the study, as explained earlier in Chapter 1, is the RDS participants. The following part of the analysis analyses the RDS participants' responses in detail. Figures 6.7 and 6.8 show the RDS participants' gender and age groups.

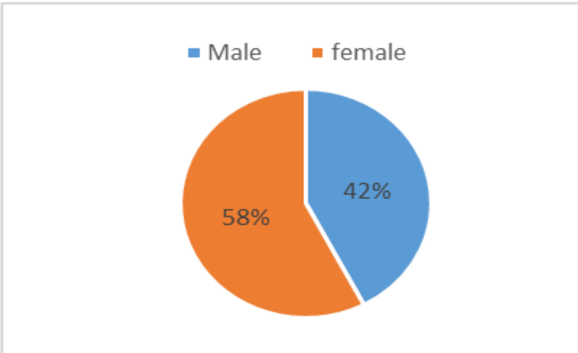

Figure 6.7: RDS participants' gender

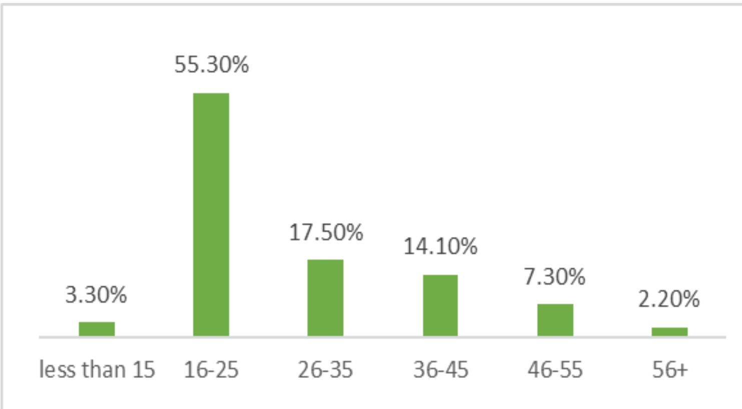

Figure 6.8: RDS participants' age group

Figure 6.9 shows that the majority of the female participants, around 59.8%, belong to the age group 16-25, and only 1.9% belong to the age group less than 15. The majority of male participants also belong to the age group 16-25, and only 3% belong to the age group 56+.

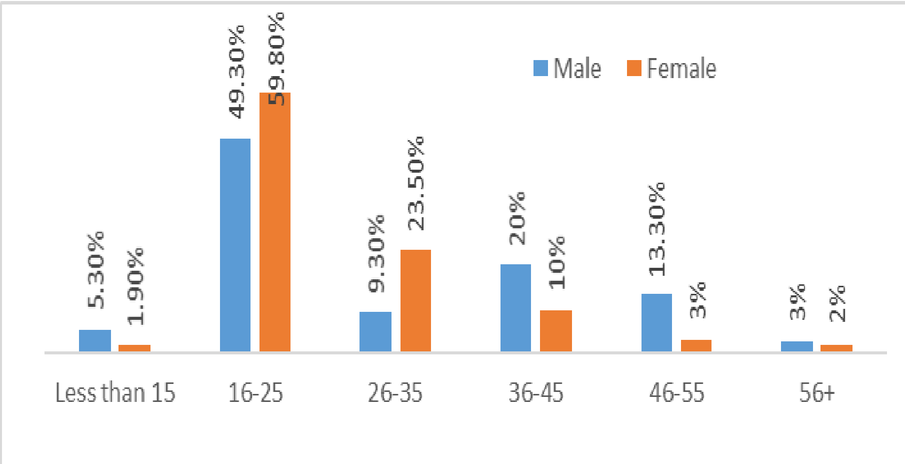

Figure 6.9: Rural dialect participants' age groups

6.4 Analysis of RDS Participants' Responses

This main part of the analysis is divided into three subparts. The first one analyses RDS participants' responses to section 2 of the questionnaire; questions 1- 29. This section investigates gender perception and gender assignment. The second part of the analysis is dedicated to section 3 of the questionnaire that examines the naming preference. The third part analyses the fourth section of the questionnaire that investigates participants' favourite names.

6.4.1 Gender Perception

This part includes two sections; the first describes the responses to the questionnaire in general. The second section, on the other hand, analyses the responses mean gender score.

6.4.1.1 Survey Responses

The analysis focuses on the sets of pseudonames generated from each neutral name. Each set appears in a table showing the changed feature, the name and the percentages of choices for male and female participants. The pseudonames that are identified as male-weighted names appear in the right column, while the pseudonames that are identified as female-weighted names appear in the left column. The classifications that participants were predicted to make are highlighted as well.

The first neutral name is /zuɾin/. Table 6.4 shows that the majority of participants' responses were consistent with the expected classification of names into male or female names. This finding is particularly true for the names that are heavily gender-weighted, /waahid/ for a male name and /tiita/ for a female name. Results show that 53%of participants have chosen /waahid/ as a male name, and 66.1% have chosen /tiitaa/ as female name.

Table 6.4: Neutral name /zuɾin/ (RDS)				
	male-weighted		**female-weighted**	
Syllable-final	/zaaɾin/		/ziiɾin/	
Male	99	55.90%	56	31.60%
female	47	26.50%	86	48.50%
Neither male nor female	31	17.50%	35	19.70%
Name-initial	/juɾin/		/tuɾin /	
Male	84	47.40%	76	42/9%
Female	72	40%	91	51.40%
Neither	21	11.80%	10	5.60%
Name-final	/zuɾid/		/zuɾaa/	
Male	97	54.80%	48	27.10%
female	51	28.80%	113	63.80%
Neither male nor female	29	16.30%	19	10.70%
Syllable-initial	/zuhin/		/zutin/	
Male	92	51.90%	69	38.90%
female	66	37.20%	74	41.80%
Neither male nor female	19	10.70%	34	19.20%
All features	/waahid/		/tiitaa/	
Male	95	53.60%	41	23.10%
female	59	33.3	117	66.10%
Neither male nor female	23	12.90%	19	10.70%

Regarding the second neutral name /ʤubi/, Table 6.5 shows that the majority of participants' responses were consistent with the expected classification of names into male or female names except for the male-weighted name /ʤuɾi/ that was assigned as a female-weighted name by 54.20% compared to 38.40% who assigned it as expected to the male gender. The heavily male-weighted name /jiris/ and female-weighted name /lubi/ were assigned by the highest percentages of participants.

Table 6.5: Neutral name: /ʤubi/ (RDS)				
	male-weighted		**female-weighted**	
Name-initial	/jubi/		/lubi/	
Male	85	48%	40	22.50%
Female	75	42.30%	118	66.60%
Neither male nor female	17	9.60%	19	10.70%
Syllable-structure	/ʤuɾis/		/ʤiibaa/	
Male	97	54.80%	70	39.50%
Female	57	32.20%	107	60.40%
Neither male nor female	23	12.90%	21	11.80%
Name-final	/ʤubis/		/ʤubaa/	
Male	80	45.10%	52	29.30%
Female	68	38.40%	99	55.90%
Neither male nor female	29	16.30%	26	14.60%
Syllable-initial	/ʤuɾi/		/ʤuti/	
Male	68	38.40%	53	29.90%
Female	96	54.20%	110	62.10%
Neither male nor female	13	7.30%	14	7.90%
Syllable-final	/ʤibi/		/ʤiibi/	
Male	87	49.10%	43	24.20%
Female	68	38.40%	109	61.50%
Neither male nor female	22	12.40%	25	14.10%
All features	/jiɾis/		/liitaa/	
Male	103	58.10%	44	24.80%
Female	54	30.50%	111	62.70%
Neither male nor female	20	11.20%	22	12.40%

The third neutral name is /nuusiɾ/. Table 6.6 shows that the majority of participants' responses were consistent with the expected classification of names into male or female categories. The heavily male-weighted name /ħaaɾim/, which was created by changing all the features of the neutral name into more male name properties, was chosen by 61% of participants as a male name. It is followed by the name /naasiɾ/ that was created by changing only the vowels of the neutral name. 60.4% of the participants have chosen the name /naaisɾ/ as a male name. On the other hand, the female-weighted name /nuusin/ that was created by changing only the name-final of the neutral name was chosen by 61% as a female name, followed by the heavily- female weighted name /ɾiiman/ that was created by changing all the features of the neutral name into female name properties.

Table 6.6: Neutral name: /nuusiɾ/ (RDS)

	male-weighted		**female-weighted**	
Name-initial	/ħuusiɾ/		/ɾuusiɾ/	
Male	102	57.60%	69	38.90%
female	49	27.60%	84	47.4%
Neither male nor female	26	14.60%	24	13.50%
Name-final	/nuusim/		/nuusin/	
Male	94	53.10%	46	25.90%
Female	59	33.30%	109	61%
Neither male nor female	24	13.50%	22	12.40%
Syllable-final	/naasiɾ/		/niisiɾ/	
Male	104	58.70%	71	40.10%
Female	60	33.80%	80	45.10%
Neither male nor female	13	7.30%	26	14.60%
Vowels	/naasiɾ/		niisaɾ//	
Male	107	60.40%	67	37.80%
Female	58	32.70%	85	48%
Neither male nor female	12	6.70%	25	14.10%
Syllable-initial	/nuuɾiɾ/		/nuumiɾ/	
Male	88	49.70%	70	39.50%
Female	63	35.50%	80	45.10%
Neither male nor female	26	14.60%	27	15.20%
All features	/ħaaɾim/		/ɾiiman/	
Male	108	61%	57	32.20%
Female	39	22%	106	59.80%
Neither male nor female	30	16.90%	14	7.90%

The fourth neutral name is /fuuki/. Results show that most of the responses were consistent with the expected classification of names into male or female names. Heavily male-weighted name /jaahid/ was chosen by 57.6% as male name. Male-weighted name /faaki/ was chosen by 37.2% as a female name while 43.5% assigned this name as male name. On the other hand, female-weighted name /fuuja/ that was created with changing only the syllable initial into female name syllable-initial sounds was chosen by 58.1%. In comparison, the heavily female-weighted name /biijaan/ was chosen by only 44% as a female name. 45% of the participants choose the name /biijaan/ as a male name.

Table 6.7: Neutral name: /fuuki/ (RDS)

	male-weighted		**female-weighted**	
Syllable-final	**/faaki/**		**/fiiki/**	
Male	66	37.20%	51	28.80%
Female	77	43.50%	101	57%
Neither male nor female	34	19.20%	25	14.10%
Vowels	**/faaki/**		**/fiikaa/**	
Male	82	46.30%	57	32.20%
Female	72	40.60%	98	55.30%
Neither male nor female	23	12.90%	22	12.40%
Name-final/syllable structure)	**/fuukid/**		**/fuukin/**	
Male	87	49.10%	60	33.80%
Female	52	29.30%	85	48%
Neither male nor female	38	21.40%	32	18%
Syllable-initial	**/fuuhi/**		**/fuuja/**	
Male	77	43.50%	47	26.50%
Female	65	36.70%	103	58.10%
Neither male nor female	35	19.70%	27	15.20%
Name-initial	**/juuki/**		**/buuki/**	
Male	85	48%	77	43.50%
Female	77	43.50%	87	49.10%
Neither male nor female	15	8.40%	13	7.30%
All features	**/jaahid/**		**/biijaan/**	
Male	102	57.60%	80	45.10%
Female	59	33.30%	78	44%
Neither male nor female	16	9%	19	10.70%

For the last neutral name /kunsaaf/, Table 6.8 shows that the majority of participants' responses were consistent with the expected classification of names into male or female names except for the name /kunsaam/. Although it was created using male names features, 44.4% of the participants assigned it as a female name. The heavily female-weighted name /ʃiimaah/ was assigned as a female name with a percentage of 76.2%.

Table 6.8: Neutral name: /kunsaaf/ (RDS)				
	male-weighted		**female-weighted**	
Name-initial	**/ʕunsaaf/**		**/ʃunsaaf/**	
Male	77	43.50%	53	29.90%
Female	75	42.30%	97	54.80%
Neither male nor female	25	14.10%	27	15.20%
Vowels	**/kinsif/**		**/kiisaaf/**	
Male	110	62.10%	60	33.80%
Female	39	22%	90	50.80%
Neither male nor female	28	15.80%	27	15.20%
Syllable-final	**/kumsaaf/**		**/kiisaaf/**	
Male	99	55.90%	69	38.90%
Female	50	28.20%	78	44%
Neither male nor female	28	15.8	30	16.90%
Syllable-initial	**/kunsˤaaf/**		**/kunmaaf/**	
Male	64	36.10%	59	33.30%
Female	73	41.20%	79	44.60%
Neither male nor female	40	22.50%	39	29%
Name-final	**/kunsaam/**		**/kunsaah/**	
Male	69	38.90%	51	28.80%
Female	79	44.60%	96	54.20%
Neither male nor female	29	16.30%	30	16.90%
All features	**/ʕimsˤim/**		**/ʃiimaah/**	
Male	84	47.40%	32	18%
Female	52	29.30%	135	76.20%
Neither male nor female	41	23.10%	10	5.60%

Overall most of the names were classified as expected, although often not very strongly. Table 6.9 shows the names that assigned to their gender as expected with highest percentages in each neutral name group. It can be observed that the majority of the names in Table 6.9 are heavily gender-weighted names, in which all features of neutral names were changed.

Differences can be noted with the male-weighted name /kinsif/ and female-weighted name /fuuja/. Short vowel /i/ seems to be strong masculine gender trigger and the syllable initial /j/ is a strong feminine gender trigger.

Table 6.9:Male and female-weighted names with highest percentages (RDS)

Male-weighted names	Percentage	Feature changed	Female-weighted names	percentage	Feature changed
/jiɾis/	58.10%	All features	/liitaa/	62.70%	All features
/waahid/	53.60%	All features	/tiitaa/	66.10%	All features
/ħaaɾim/	61%	All features	/ɾiiman/	59.80%	All features
/jaahid/	57.60%	All features	/fuuja/	58.10%	Syllable-initial
/kinsif/	62.10%	vowels	/ʃiimaah/	76.20%	All features

6.4.1.2 Mean Gender Score

In order to test the hypothesis that participants inferred the gender of pseudonames relying on their phonology, participants' responses were converted into numerical values for statistical analysis as applied in Mueller and Stumme (2016) and Fredrickson (2007).

With 177 RDS participants, the overall gender assignment for each name was represented by the average of those 177 values. For each name, every participant's individual response was given a numerical value, with 0 assigned for a male categorisation, 1 for a female categorisation, and 0.5 for a neither-male-nor-female categorisation.

Names that have a score that is equal or more than 0.7 are considered strongly female-weighted names while name that are equal or less than 0.34 are considered strongly male-weighted names. Names that scored between 0.35 and 0.7 are considered not strongly gendered. Female-weighted names with the highest score and male-weighted names with the lowest score are highlighted. Mean gender score (MGS) for each of the 58 pseudonames in responses of all RDS participants are shown in Table 6.10. Names that received strongly feminine scoring are highlighted in orange, while names that received strongly masculine scoring are highlighted in blue.

Table 6.10: Mean gender assignments for pseudonames for all RDS participants

	Feature manipulated	Name	Expected gender	MGS
1: A	Name-initial	/jubi/	Male	0.471751
1: B	Name-initial	/lubi/	Female	0.720339
2: A	Name-initial	/tuɾin/	Female	0.542373
2: B	Name-initial	/juɾin/	Male	0.466102
3: A	Name-initial	/ħuusiɾ/	Male	0.350282
3: B	Name-initial	/ɾuusiɾ/	Female	0.542373
4: A	Syllable-initial	/kunsˤaaf/	Male	0.525424
4: B	Syllable-initial	/kunmaaf/	Female	0.556497
5: A	Name-initial	/buuki/	Female	0.528249
5: B	Name-initial	/juuki/	Male	0.477401
6: A	Name-initial	/ʕunsaaf/	Male	0.49435
6: B	Name-initial	/ʃunsaaf/	Female	0.624294
7: A	All features	/ʕimsˤim/	Male	0.409605
7: B	All features	/ʃiimaah/	Female	0.79096
8: A	All features	/biijaan/	Female	0.49435
8: B	All features	/jaahid/	Male	0.378531
9: A	All features	/ħaaɾim/	Male	0.305085
9: B	All features	/ɾiiman/	Female	0.638418
10: A	Name-final	/nuusim/	Male	0.40113
10: B	Name-final	/nuusin/	Female	0.677966
11: A	Syllable-final	/kumsaaf/	Male	0.361582

11: B	Syllable-final	/kiisaaf/	Female	0.525424
12: A	Syllable-final	/fiiki/	Female	0.641243
12: B	Syllable-final	/faaki/	Male	0.531073
13: A	Syllable-final	/ʤibi/	Male	0.446328
13: B	Syllable-final	/ʤiibi/	Female	0.686441
14: A	Syllable-final	/zaaɾin/	Male	0.353107
14: B	Syllable-final	/ziiɾin/	Female	0.584746
15: A	Syllable-final	/niisiɾ/	Female	0.525424
15: B	Syllable-final	/naasiɾ/	Male	0.375706
16: A	Name-final	/zuɾaa/	Female	0.69209
16: B	Name-final	/zuɾid/	Male	0.370056
17: A	Name-final	kunsaah/	Female	0.627119
17: B	Name-final	/kunsaam/	Male	0.528249
18: A	Syllable-initial	/zutin/	Female	0.514124
18: B	Syllable-initial	/zuhin/	Male	0.426554
19: A	Name-final	/ʤubaa/	Female	0.632768
19: B	Name-final	/ʤubis/	Male	0.466102
20: A	all features	/waahid/	Male	0.398305
20: B	all features	/tiitaa/	Female	0.714689
21: A	Vowels	/niisaɾ/	Female	0.550847
21: B	Vowels	/naasiɾ/	Male	0.361582
22: A	syllable initial	/ʤuti/	Female	0.661017
22: B	syllable initial	/ʤuɾi/	Male	0.579096
23: A	Vowels	/faaki/	Male	0.471751
23: B	Vowels	/fiikaa/	Female	0.615819
24: A	Syllable-initial	/fuuhi/	Male	0.466102
24: B	Syllable-initial	/fuuja/	Female	0.658192
25: A	Syllable-structure	/ʤuɾis/	Male	0.387006
25: B	Syllable-structure	/ʤiibaa/	Female	0.663842
26: A	all features	/liitaa/	Female	0.689266
26: B	all features	/jiɾis/	Male	0.361582
27: A	Syllable-initial	/nuuɾiɾ/	Male	0.429379
27: B	Syllable-initial	/nuumiɾ/	Female	0.528249
28: A	Name-final/syllable-structure	/fuukid/	Male	0.40113
28: B	Name-final/syllable-structure	/fuukin/	Female	0.570621
29: A	Vowels	/kinsif/	Male	0.299435
29: B	Vowels	/kiisaaf/	Female	0.584746

The MGS showed that some names were considered more male-weighted names or more female-weighted names than others. The heavily female-weighted name /ʃiimaah/ scored the highest MGS of 0.79096. This name was created by changing all the features of the neutral name into more female-weighted name features. The male-weighted name

/kinsif/, on the other hand, scored the lowest MGS of 0.299435. This name was created by changing the vowels of the neutral name into male-weighted vowel /i/.

Since age and gender are socially and linguistically relevant factors in linguistics (e.g. Meyerhoff 2011; Holmes &Wilson (2017), the overall scores have been divided according to age and gender, to allow a closer examination of the patterns in the data. The two main groups; RDS male and female participants were classified into different four groups as shown in the Table 6.11.

Table 6.11: Participants' age groups classification

Group	Age group
RDS (younger male participants)	(up to 25)
RDS (younger female participants)	(up to 25)
RDS (older male participants)	(26 and older)
RDS (older female participants)	(26 and older)

Mean gender assignments for each of the 58 pseudonames in the different groups of participants are shown in Table 6.12. Strongly feminine scores are highlighted in orange while strongly masculine scores are highlighted in blue.

Table 6.12: Mean gender assignments for pseudonames among age and gender groups (RDS)

Feature	Name	Expected gender	MGS younger RDS male	MGS older RDS male	MGS younger RDS female	MGS older RDS female
Name-initial	/jubi/	Male	0.297619	0.294118	0.642857	0.525641
Name-initial	/lubi/	Female	0.72619	0.764706	0.666667	0.769231
Name-initial	/tuɾin/	Female	0.52381	0.735294	0.515873	0.448718
Name-initial	/juɾin/	Male	0.47619	0.279412	0.555556	0.461538
Name-initial	/ħuusiɾ/	Male	0.321429	0.220588	0.460317	0.307692
Name-initial	/ɾuusiɾ/	Female	0.535714	0.588235	0.515873	0.538462
Syllable-	/kunsˤaaf/	Male	0.392857	0.352941	0.666667	0.602564

initial						
syllable initial	/kunmaaf/	Female	0.511905	0.647059	0.531746	0.551282
Name-initial	/buuki/	Female	0.464286	0.661765	0.515873	0.512821
Name-initial	/juuki/	Male	0.511905	0.323529	0.52381	0.487179
Name-initial	/ʕunsaaf/	Male	0.392857	0.367647	0.595238	0.538462
Name-initial	/ʃunsaaf/	Female	0.607143	0.661765	0.595238	0.666667
All features	/ʕimsˤim/	Male	0.404762	0.25	0.484127	0.423077
All features	/ʃiimaah/	Female	0.738095	0.867647	0.706349	0.923077
All features	/biijaan/	Female	0.642857	0.573529	0.444444	0.358974
All features	/jaahid/	Male	0.345238	0.264706	0.428571	0.423077
All features	/ħaaɾim/	Male	0.380952	0.102941	0.428571	0.192308
All features	/ɾiiman/	Female	0.619048	0.691176	0.603175	0.679487
Name-final	/nuusim/	Male	0.488095	0.294118	0.436508	0.333333
Name-final	/nuusin/	Female	0.654762	0.808824	0.65873	0.628205
Syllable-final	/kumsaaf/	Male	0.392857	0.220588	0.428571	0.333333
Syllable-final	/kiisaaf/	Female	0.607143	0.661765	0.452381	0.448718
Syllable-final	/fiiki/	Female	0.583333	0.75	0.603175	0.679487
Syllable-final	/faaki/	Male	0.619048	0.470588	0.507937	0.538462
Syllable-final	/ʤibi/	Male	0.392857	0.235294	0.579365	0.461538
Syllable-final	/ʤiibi/	Female	0.75	0.867647	0.531746	0.717949
Syllable-final	/zaaɾin/	Male	0.357143	0.191176	0.436508	0.346154
Syllable-final	/ziiɾin/	Female	0.547619	0.75	0.563492	0.525641
Syllable-final	/niisiɾ/	Female	0.630952	0.426471	0.603175	0.358974
Syllable-	/naasiɾ/	Male	0.392857	0.323529	0.468254	0.269231

final						
Name-final	/zuɾaa/	Female	0.75	0.794118	0.587302	0.717949
Name-final	/zuɾid/	Male	0.357143	0.25	0.47619	0.307692
Name-final	kunsaah/	Female	.642857	0.661765	0.547619	0.717949
Name-final	/kunsaam/	Male	0.392857	0.5	0.634921	0.512821
Syllable-initial	/zutin/	Female	0.5	0.544118	0.555556	0.448718
Syllable-initial	/zuhin/	Male	0.321429	0.294118	0.531746	0.474359
Name-final	/ʤubaa/	Female	0.642857	0.75	0.547619	0.666667
Name-final	/ʤubis/	Male	0.488095	0.352941	0.531746	0.423077
All features	/waahid/	Male	0.416667	0.220588	0.603175	0.192308
All features	/tiitaa/	Female	0.702381	0.808824	0.619048	0.807692
Vowels	/niisaɾ/	Female	0.654762	0.514706	0.587302	0.423077
Vowels	/naasiɾ/	Male	0.452381	0.205882	0.428571	0.282051
Syllable-initial	/ʤuti/	Female	0.642857	0.691176	0.587302	0.75641
Syllable-initial	/ʤuɾi/	Male	0.511905	0.426471	0.634921	0.705128
Vowels	/faaki/	Male	0.428571	0.397059	0.484127	0.576923
Vowels	/fiikaa/	Female	0.559524	0.720588	0.555556	0.666667
Syllable-initial	/fuuhi/	Male	0.404762	0.308824	0.634921	0.384615
Syllable-initial	/fuuja/	Female	0.642857	0.808824	0.555556	0.717949
Syllable-structure	/ʤuɾis/	Male	0.333333	0.176471	0.444444	0.525641
Syllable-structure	/ʤiibaa/	Female	0.867647	0.794118	0.563492	0.717949
all features	/liitaa/	Female	0.619048	0.720588	0.666667	0.782051
all features	/jiɾis/	Male	0.309524	0.308824	0.436508	0.333333
Syllable-initial	/nuuɾiɾ/	Male	0.47619	0.352941	0.444444	0.435897
Syllable-initial	/nuumiɾ/	Female	.583333	0.558824	0.484127	0.5

Name-final/ syllable-structure	/fuukid/	Male	0.333333	0.352941	0.547619	0.294872
Name-final/ syllable-structure	/fuukin/	Female	0.5	0.735294	0.539683	0.564103
Vowels	/kinsif/	Male	0.261905	0.220588	0.428571	0.192308
Vowels	/kiisaaf/	Female	0.654762	0.602941	0.539683	0.551282

Table 6.13 shows that, overall, RDS young male participants, old male participants and old female participants inferred gender from the pseudonames as they assigned the gender to the names as predicted. Younger female participants' responses, on the other hand, show that they did not infer the gender as predicted and had the most neutral ratings.

Overall, the older the participants seem to have stronger feelings about the gender associations of the pseudo-names. Some suggestive trends can be noted in the responses of three of the three groups (RDS younger and older male and older female participants). Older participants' responses were the closest to the expected gender assignment, particularly the older male participants. Such a result can be associated with the social impact of naming practice in Jordan and other Muslim countries. The father is the one responsible for giving his children good names with his wife's approval. In case of disagreement, the father's decision is taken into consideration according to Islamic law. Older RDS male participants are most probably fathers, and their choices reflect, in one way or another, their approval of the most popular names that were used to create the pseudonames.

Though three groups came close to agreeing on which names were male and which were female, some names were judged as more male-weighted or more female-weighted. Table 6.13 shows the names agreed on as female and male names with high scores among the three groups.

Table 6.13: Names show agreement on the gender among (RDS male and older female participants)					
Female names	**Feature**	**Change**	**Male names**	**Feature**	**Change**
/ʃiimaah/	All features		/kinsif/	Vowels	/u/ into /i/ /aa/ into /i/
/tiitaa/	All features		/jiɾis/	All features	
/ʤiibaa/	Syllable-structure	CV.CV into CVV.CVV	/ħuusiɾ/	Name-initial	/n/ into /ħ/
/zuɾaa/	Name-final	/n/ into /aa/			
/lubi/	Name-initial	/ʤ/ into /l/			
ʤiibi/	Syllable-final	/u/ into /ii/			

For the female-weighted names, besides changing all the features, open final syllable (ends in a vowel), name-final /aa/, name-initial /l/ and syllable-final/ii/ triggered strong feminine scoring for both RDS male and female participants. On the other hand, changing all features of neutral names, the short vowel /i/ and name initial //ħ/ triggered masculine scoring for RDS male and female participants.

Female names that received the highest scores and male names that received the lowest scores (male and female weighted names) among the four groups (older male, younger male, older female, and younger female) are shown in Table 6.14 and 6.15:

Table 6.14: Female-weighted name with highest scores (RDS)		
Feature	**Name**	**Score**
All features	/ʃiimaah/	0.923077
syllable final	/ʤiibi/	0.867647
syllable structure	ʤiibaa/	0.867647
All features	/tiitaa/	0.808824
Name final	/nuusin/	0.808824

Table 6.15: Male-weighted names with lowest scores (RDS)		
Feature	**Name**	**Score**
All features	/ħaaɾim/	0.102941
Syllable structure	/ʤuɾis/	0.176471
Syllable final	/zaaɾin/	0.191176
All features	/waahid/	0.192308
Vowel	/kinsif/	0.192308

The male-weighted name /ħaaɾim/scored the lowest with MGS of 0.102941, and the female-weighted name /ʃiimaah/ scored the highest with MGS of 0.923077. Both names are considered heavily gender-weighted as they are created by changing all the features of the neutral names.

It is worth mentioning that the female-weighted name /ʃiimaah/ is similar to the Arabic name /ʃajmaaʔ/. However, I believe this similarity with the Arabic name did not affect the choice. Other pseudonames in the questionnaire were chosen for the purpose of testing if the participants will assign the gender of the names relying on their previous knowledge of a similar name. The name /biijaan/, which was created by changing all features of neutral name /fuuki/ into a more female-sounding name, is similar to the Arabic name /bajaan/. Nevertheless, it had neutral ratings in all groups. The male-weighted name /naasiɾ/ is similar to the Arabic male name /naasˤiɾ/ and yet, was assigned to male gender by only two groups.

Tables 6.16, 6.17, and 6.18 show the highest and lowest scores in each group separately. Female-weighted names are in descending order and male-weighted names are in ascending order.

Table 6.16: Names with highest/lowest scores among younger male participants (RDS)

Female names	Score	Feature	Change	Male names	Score	Feature	Change
/ʤiibaa/	0.867647	Syllable-structure	CV.CV into CVV.CVV	/kinsif/	0.261905	Vowels	/u/ into /i/ /aa/ into /i/
/ʤiibi/	0.75	Syllable-final	/u/ into /ii/	/jubi/	0.297619	Name-initial	/ʤ/ into /j/
/zuɾaa/	0.75	Name-final	/n/ into /aa/	/jiɾis/	0.309524	All features	
/ʃiimaah/	0.738095	All features		/ħuusiɾ/	0.321429	Name-initial	/n/ into /ħ/
/lubi/	0.72619	Name-initial	/ʤ/ into /l/	/zuhin/	0.321429	Syllable-initial	/ɾ/ into /h/
/tiitaa/	0.702381	All features		/fuukid/	0.333333	Name-final Syllable-structure	/n/ into /d/ CVV.CV into CVV.CVC
				/jaahid/	0.345238	All features	

Table 6.17: Names with highest/lowest score among older male participants (RDS)							
Female names	**Score**	**Feature**	**Change**	**Male name**	**Score**	**Feature**	**Change**
/ʃiimaah/	0.867647	All features		/ħaaɾim/	0.102941	All features	
/ʤiibi/	0.867647	Syllable-final	/u/ into /ii/	/ʤuɾis/	0.176471	Syllable-structure	CV.CV into CV.CVC
/tiitaa/	0.808824	all features		/zaaɾin/	0.191176	Syllable-final	/u/ into /aa/
/nuusin/	0.808824	Name-final	/ɾ/ into /n/	/naasiɾ/	0.205882	Vowels	/uu/ into /aa/
/fuuja/	0.808824	Syllable-initial	/k/ into /j/	/kinsif/	0.220588	Vowels	/u/ into /i/ /aa/ into /i/
/zuɾaa/	0.794118	Name-final	/in/ into /aa/	/ħuusiɾ/	0.220588	Name-initial	/n/ into /ħ/
/ʤiibaa/	0.794118	Syllable-structure	CV.CV into CVV.CVV	/kumsaaf/	0.220588	Syllable-final	/n/ into /m/
/lubi/	0.764706	Name-initial	/ʤ/ into /l/	/waahid/	0.220588	All features	
/ziiɾin/	0.75	Syllable-final	/u/ into /ii/	/ʤibi/	0.235294	Syllable-final	/u/ into /i/
/ʤubaa/	0.75	Name final	/i/ into /aa/	/ʕimsˤim/	0.25	All features	
/fiiki/	0.75	Syllable-final	/uu/ into /ii/	/zuɾid/	0.25	Name-final	/n/ into /d/
/tuɾin/	0.735294	Name-initial	/z/ into /t/	/jaahid/	0.264706	All features	
/fuukin/	0.735294	Name-final/syllable-structure	/i/ into /n/ CVV.CV into CVV.CVC	/juɾin/	0.279412	Name-initial	/z/ into /j/
/fiikaa/	0.720588	Vowels	/uu/ into /ii/ /i/ into /aa/	/jubi/	0.294118	Name-initial	/ʤ/ into /j/
/liitaa/	0.720588	All features		/nuusim/	0.294118	Name-final	/ɾ/ into /m/
				/zuhin/	0.294118	Syllable-initial	/ɾ/ into /h/
				/fuuhi/	0.308824	Syllable-initial	/k/ into /h/
				/jiɾis/	0.308824	All features	
				/naasiɾ/	0.323529	Syllable-final	/uu/ into /aa/
				/juuki/	0.323529	Name-initial	/f/ into /j/

Table 6.18: Names with highest/lowest score among older female participants(RDS)							
Female names	**Score**	**Feature**	**change**	**Male name**	**Score**	**Feature**	**Change**
/ʃiimaah/	0.923077	All features		/kinsif/	0.192308	Vowels	/u/ into /i/ /aa/ into /i/
/tiitaa/	0.807692	All features		/ħaaɾim/	0.192308	All features	
/liitaa/	0.782051	All features		/waahid/	0.192308	All features	
/lubi/	0.769231	Name-initial	/ʤ/ into /l/	/naasiɾ/	0.269231	Syllable-final	/uu/ into /aa/
/ʤuti/	0.75641	Syllable-initial	/b/ into /t/	/naasiɾ/	0.282051	Vowels	/uu/ into /aa/
/kunsaah/	0.717949	Name-final	/f/ into /h/	/fuukid/	0.294872	Name-final/ syllable-structure	/n/ into /d/ CVV.CV into CVV.CVC
/ʤiibi/	0.717949	Syllable-final	/u/ into /ii/	/ħuusiɾ/	0.307692	Name-initial	/n/ into /ħ/
/zuɾaa/	0.717949	Name-final	/i/ into/aa/	/zuɾid/	0.307692	Name-final	/n/ into /d/
/fuuja/	0.717949	Syllable -initial	/k/ into /j/	/nuusim/	0.333333	Name-final	/n/ into /m/
/ʤiibaa/	0.717949	Syllable-structure	CV.CV into CVV.CVV	/kumsaaf/	0.333333	Syllable-final	/n/ into /m/
				/jiɾis/	0.333333	All features	
				/zaaɾin/	0.346154	Syllable-final	/u/ into /aa/

Regarding the younger female participants, MGS shows that most of the names have scores ranging between 0.4 and 0.6, which means the responses were quite close to the middle. The female-weighted name /ʃiimaah/ scored the highest with MGS of 0.706349. Male-weighted names /jaahid/ and /ħaaɾim/ scored the lowest with MGS of 0.428571; a neutral score that cannot be interpreted as a male-weighted name. Younger female participants' neutral ratings can be linked to our previous assumption that gender and age group affected phonological association of names. Besides the impact of gender and age on their responses, younger female participants appeared to be less engaged in replying to the questionnaire itself. The majority of the responses were around neutral ratings.

Overall, the results support the first hypothesis that participants can assign gender to names relying on their phonology. This is more clearly true for older male participants and older female participants. Phonological assignment of names seems to be affected by age and gender, with older male participants able to assign the names to their gender more as predicted than the older female participants. Older female participants were able to assign the names and gender more than younger male participants. Younger male participants were able to assign names and gender more than younger female participants. This can be interpreted in the pattern:

> Older male participants > older female participants > younger male participants > younger female participants

However, some names had neutral ratings among all participants group and one male name /ʤuɾi/ was assigned to a female gender by RDS older female group. Table 6.19 shows the male names that had neutral ratings in all groups.

Table 6.19: Male names with neutral ratings in all groups (RDS)

Feature	Name	Expected gender	MGS younger RDS male	MGS older RDS male	MGS younger RDS female	MGS older RDS female
Name-final	/ʤubis/	Male	0.488095	0.352941	0.531746	0.423077
Name-initial	/ʕunsaaf/	Male	0.392857	0.367647	0.595238	0.538462
Name-final	/kunsaam/	Male	0.392857	0.5	0.634921	0.512821
Syllable-initial	/nuuɾiɾ/	Male	0.47619	0.352941	0.444444	0.435897
Syllable-initial	/kunsˤaaf/	Male	0.392857	0.352941	0.666667	0.602564
Vowels	/faaki/	Male	0.428571	0.397059	0.484127	0.576923

To figure out what triggered a neutral rating for these names, each name was compared with other names that are similar in some way, particularly the changed feature. The male-weighted name /faaki/ had scores around neutral ratings in all the groups. This name was created by changing the vowels of neutral name /fuuki/ from /uu/ into /aa/. To explore the reason behind the neutral ratings, the other male-weighted name that has the same vowels was studied. As shown in Table 6.20, the name /naasiɾ/ was created by changing the vowels of the neutral name /nuusiɾ/ from /uu/ into /aa/. Older male participants and older female participants assigned this name to the male gender.

Table 6.20: Male-weighted names with the same vowel change (RDS)

Feature	Name	Expected gender	MGS younger RDS male	MGS older RDS male	MGS younger RDS female	MGS older RDS female
Vowels	/faaki/	Male	0.428571	0.397059	0.484127	0.576923
Vowels	/naasiɾ/	Male	0.452381	0.205882	0.428571	0.282051
Syllable-final /aa/	/zaaɾin/	Male	0.357143	0.191176	0.436508	0.346154

Both names have neutral name-initial and name-final, the only non-neutral difference that is observed besides the vowels change is the syllable structure. /faaki/ ends in an open syllable CVV.CV while the name /naasiɾ/ ends in a closed syllable CVV.CVC. Male names usually have CVC as a second syllable, as shown in Table 4.9. For the name /naasiɾ/, syllable structure is the feature that triggered stronger masculine score than the vowels. The male-weighted name /zaaɾin/ had the vowel /aa/ as syllable-final. Older male and female participants assigned this name to male gender. /zaaɾin/ and /naasiɾ/ have the same final syllable structure CVC, which seems to be the feature that triggered the masculine scoring, not the syllable-final /aa/.

The male-weighted names /ʤubis/ and /kunsaam/ also had scores around neutral ratings in all the groups. Both names were created by changing the name-final sounds of neutral names. No other male-weighted name ends with /s/ other than /ʤubis/, which may imply that the name-final /s/ is not as strong as other name-final sounds in male-weighted names; namely /d/, /z/, and /m/. Table 6.21 shows male-weighted names that were created by changing name-final sounds.

Table 6.21: Male-weighted names that were created by changing the name-final (RDS)

Feature	Name	Expected gender	MGS younger RDS male	MGS older RDS male	MGS younger RDS female	MGS older RDS female
Name-final	/ʤubis/	Male	0.488095	0.352941	0.531746	0.423077
Name-final	/nuusim/	Male	0.488095	0.294118	0.436508	0.333333
Name-final	/zuɾid/	Male	0.357143	0.25	0.47619	0.307692
Name-final	/kunsaam/	Male	0.392857	0.5	0.634921	0.512821

Although /d/, /z/, and /m/ are considered name-final sounds in male weighted-names, the name /kunsaam/ has the sound /m/ as name-final and yet was not assigned as male-weighted name by any of the groups. This name was compared with other male-weighted names that end in /m/ sounds. The name /nuusim/ had scores of 0.294118 and 0.333333 by older male participants and older female participants. /nuusim/ and /kunsaam/ have neutral features except the name-final /m/ and the syllable-structure of the second syllable in /nuusim/ CVC, which is male-weighted second syllable structure. The second syllable structure CVVC in /kunsaam/ is not a male-weighted syllable structure based on the results presented in Table 4.9. The syllable structure supposedly appears to create the difference, and based on that, the name-final /m/ is still considered as a male name-final feature. Still, the syllable structure is the stronger feature that triggered the masculine scoring in /nuusim/. Male-weighted syllable-initial /ɾ/ is a weak gender trigger in /nuuɾiɾ/

For the study of the impact of CVVC on the gender assignment, other male-weighted names that have the same second syllable structure CVVC are in Table 6.22.

Table 6.22: Male-weighted names with CVVC second syllable (RDS)

Feature	Name	Expected gender	MGS younger RDS male	MGS older RDS male	MGS younger RDS female	MGS older RDS female
Syllable -final	/kumsaaf/	Male	0.392857	0.220588	0.428571	0.333333
Name-initial	/ʕunsaaf/	Male	0.392857	0.367647	0.595238	0.538462
Syllable -initial	/kunsˤaaf/	Male	0.392857	0.352941	0.666667	0.602564
Name-final	/kunsaam/	Male	0.392857	0.5	0.634921	0.512821

As Table 6.22 shows, /kumsaaf/ was the only male-weighted name with a CVVC as a second syllable structure that was assigned to male gender. It is observed that the three other names share the same neutral syllable-final sound /n/ while /kumsaaf/ has the sound /m/. /m/ is assigned to male names based on results presented in Table 4.9. The syllable-final /m/ triggered the masculine scoring of this name although it has CVVC as a second syllable.

The name /nuuɾiɾ/ had also neutral scoring. This name was created by changing the second syllable-initial of neutral name from /s/ into /ɾ/. Table 6.23 shows male-weighted names that have /ɾ/ as syllable initial. Syllable initial /ɾ/ that is supposed to be male-weighted feature did not trigger strong masculine score in /nuuɾiɾ/ nor in /ʤuɾi/. Younger female participants assigned /ʤuɾi/ as female-weighted name. A possible explanation is that the open syllable ending in /ʤuɾi/ triggered the feminine scoring not the syllable initial /ɾ/.

Table 6.23: Male-weighted names with syllable initial /ɾ/ (RDS)

Feature	**Name**	**Expected gender**	**MGS younger RDS male**	**MGS older RDS male**	**MGS younger RDS female**	**MGS older RDS female**
Syllable-initial	/ʤuɾi/	Male	0.511905	0.426471	0.634921	0.705128
Syllable-initial	/nuuɾiɾ/	Male	0.47619	0.352941	0.444444	0.435897

For female-weighted names, Table 6.24 shows the names that had neutral ratings. /kunmaaf/, /nuumiɾ/ and /kunmaaf/ have the syllable-initial /m/. A possible explanation is that syllable-initial /m/ did not trigger strong feminine scoring. The name /ɾiiman/ that was created by changing all features, unpredictably, had neutral ratings in all groups. The name has the /m/ as syllable-initial as well.

Table 6.24: female-weighted names with neutral ratings in all groups (RDS)

Feature	**Name**	**Expected gender**	**MGS younger RDS male**	**MGS older RDS male**	**MGS younger RDS female**	**MGS older RDS female**
Syllable-initial	/kunmaaf/	Female	0.511905	0.647059	0.531746	0.551282
Syllable-initial	/nuumiɾ/	Female	.583333	0.558824	0.484127	0.5
Syllable-initial	/kunmaaf/	Female	0.511905	0.647059	0.531746	0.551282
Syllable-initial	/zutin/	Female	0.5	0.544118	0.555556	0.448718
Name-initial	/buuki/	Female	0.464286	0.661765	0.515873	0.512821
Name-initial	/ʃunsaaf/	Female	0.607143	0.661765	0.595238	0.666667
Name-initial	/ɾuusiɾ/	Female	0.535714	0.588235	0.515873	0.538462
All features	/ɾiiman/	Female	0.619048	0.691176	0.603175	0.679487
Vowels	/niisaɾ/	Female	0.654762	0.514706	0.587302	0.423077
Vowels	/kiisaaf/	Female	0.654762	0.602941	0.539683	0.551282
All features	/biijaan/	Female	0.642857	0.573529	0.444444	0.358974

As Table 6.24 shows, the name /zutin/ created by changing the syllable-initial of neutral name from /ɾ/ into /t/ had a neutral rating. When this name is compared to other name, , it was found that the name /ʤuti/ also had neutral ratings in all groups except for younger female participants. A possible explanation is that syllable initial /t/ did not trigger strong female scoring in all groups and the syllable structure (open ending) triggered feminine scoring in /ʤuti/ for younger female participants. Table 6.24 also shows that /buuki/, /ʃunsaaf/ and /ɾuusiɾ/, that were created by changing name-initial sounds of neutral names into female name-initial sounds, had neutral ratings. Name initial /b/ received neutral ratings in /buuki/ and the heavily female-weighted name /biijaan/. Name-initial /ɾ/ had neutral ratings in /ɾuusiɾ/ and heavily female-weighted name /ɾiiman/. Relying on this, I consider that name-initial /ɾ/ and /b/ did not trigger strong feminine scoring.

Regarding name-initial /ʃ/ in /ʃunsaaf, another name had /ʃ/ as a name-initial, which is the heavily female-weighted name /ʃiimaah/. However, in /ʃiimaah/ syllable initial /ʃ/ was not the strongest trigger of the feminine scoring as the name has female names initial syllable CVV. Name-initial /ʃ/ is neutral feature for RDS.

Table 6.25 also shows that changing the neutral vowels into /ii/ in names /niisaɾ/ and /kiisaaf/ did not trigger feminine scoring. Compared to similar names, the name /fiikaa/ was also created by changing the neutral vowels into /ii/. However, this name was assigned to the female gender by older male participants, as shown in 6.25.

Table 6.25: Female-weighted names with the same vowels change (RDS)

Feature	Name	Expected gender	MGS Younger RDS male	MGS older RDS male	MGS Younger RDS female	MGS older RDS female
Vowels	/niisaɾ/	female	0.654762	0.514706	0.587302	0.423077
Vowels	/kiisaaf/	Female	0.654762	0.602941	0.539683	0.551282
Vowels	/fiikaa/	female	0.559524	0.720588	0.555556	0.666667

It can be observed that name /fiikaa/ ends in an open syllable that may trigger the feminine scoring rather than the vowel /ii/. Long vowel /ii/ can still be considered a feminine feature but the final syllable ending (open-closed) is a stronger feminine feature for RDS.

6.4.2 Naming Preference

The second question of the questionnaire is divided into two parts. The first part comprises five groups, and each group consists of five to seven female-weighted names. Participants were asked to choose a name from each group they would prefer as their own daughter's name. The second part is made of five groups as well; each consists of five to seven male-weighted names. Participants were asked to choose a name they would prefer as their own son's name. This question was created to test the hypothesis that heavily gender-weighted names that were created by changing all features of neutral names would be preferred over the names created by changing one feature only. Responses were analysed based on the gender of the participants. Table 6.26 shows the RDS participants' choices of female names. Each group shows the names that were created from the same neutral name and the heavily gender-weighted name in each group is highlighted. The female-weighted name /ʤiibaa/, which was created by changing the syllable structure of the neutral name /ʤubi/, did not appear in this section of questionnaire due to technical issues. However, that does not impact the examination of the heavily female-weighted names.

Table 6.26: RDS participants' preferences (female names)		
1-	**male participants**	**female participants**
/tiitaa/	44%	28.40%
/zutin/	9.30%	16.60%
/zuɾaa/	26.60%	28.40%
/tuɾin/	12%	20.50%
/ziiɾin/	9.30%	5.80%
2-		
/ ʤubaa/	20%	21.50%
/ʤuti/	8%	18.60%
/lubi/	17.30%	20.50%
/liitaa/	46.60%	25.40%
/ʤiibi/	8%	13.70%
3-		
/ɾiiman/	42.60%	33.30%
/ɾuusiɾ/	13.30%	16.60%
/niisiɾ/	12%	8.80%
/nuusin/	21.40%	21.50%
/nuumiɾ/	5.30%	6.80%
/niisaɾ/	5.30%	12.70%
4-		
/biijaan/	56%	49%
/fiikaa/	12%	16.60%
/fuukin/	4%	2.90%
/buuki/	9.30%	12.70%
/fuuja/	6.60%	7.80%
/fiiki/	13.30%	9.80%
5-		
/ʃiimaah/	70.60%	65.60%
/kunmaaf/	9.30%	8.80%
/ʃunsaaf/	5.30%	10.70%
/kiisaaf/	10.60%	13.70%

Table 6.26 reveals that RDS responses were consistent with the hypothesis. Heavily female-weighted names /tiitaa/, /liitaa/, /ɾiiman/, /biijaan/, /ʃiimaah/ were chosen by male and female participants as their preferred female name scoring the highest percentages. However, male participants seemed to be more decisive about the choice of the heavily female-weighted names as evidenced by the percentages in Table 6.27.

Table 6.27: Participants' choices of heavily female-weighted names (RDS)		
	male participants	**female participants**
/tiitaa/	44%	28.40%
/liitaa/	46.60%	25.40%
/ɾiiman/	42.60%	33.30%
/biijaan/	56%	49%
/ʃiimaah/	70.60%	65.60%

The name /ʃiimaah/ was chosen with the highest percentages by male and female participants. The name was created using the female-sounding sound /ʃ/ as a name-initial, vowel /ii/ as a syllable-final, /h/ as a name final, and /m/ as a syllable-initial.

Regarding participants' preferences of male names, Table 6.28 shows RDS participants' preferences of male names**.**

Table 6.28: RDS participants' preferences (male names)		
1-	**male participants**	**female participants**
/jiɾis/	41.30%	24.50%
/jubi/	17.30%	24.50%
/ʤibi/	5.30%	13.70%
/ʤuɾis/	20%	17.60%
/ʤuɾi/	6.60%	8.80%
/ʤubis/	9.30%	10.70%
2-		
/wuɾin/	16%	26.40%
/waahid/	53.30%	28.40%
/zuɾid/	6.60%	2.90%
/zaaɾin/	18.60%	24.50%
/zuhin/	5.30%	17.60%
3-		
/naasiɾ/	46.60%	46%
/ħuusiɾ/	6.60%	8.80%
/nuuɾiɾ/	14.60%	25.40%
/ħaaɾim/	18.60%	11.70%
/nuusim/	13.30%	7.80%
4-		
/jaahid/	50.60%	35.20%
/faaki/	18.60%	27.40%
/juuki/	13.30%	16.60%
/fuukid/	12%	14.70%
/fuuhi/	5.30%	7.80%
5-		
/ʕimsˤim/	40%	12.70%
/ʕunsaaf/	20%	27.40%
/kunsˤaaf/	16%	14.70%
/kunsaam/	6.60%	18.60%
/kinsif/	6.60%	14.70%
/kumsaaf/	10.6%	11.7%

Overall, participants' responses were consistent with the hypothesis. Table 6.29 shows that male participants' responses were consistent with the hypothesis regarding names /jiɾis/, /waahid/, /jaahid/ and /ʕimsˤim/, these heavily male-weighted names were chosen with highest percentages in their group. However, the heavily male-weighted name /ħaaɾim/ was chosen by only 18.6%. Female participants, on the other hand have chosen /jiɾis/, /waahid/, /jaahid/ as their preferred male names with highest percentages in their group. The names /ħaaɾim/ and /ʕimsˤim/ were only chosen by 11.7% and 12.7% respectively.

Table 6.29:Participants' choices of heavily male -weighted names (RDS)		
Name	**male participants**	**female participants**
/jiɾis/	41.30%	24.50%
/waahid/	53.30%	28.40%
/jaahid/	50.60%	11.7%
/ħaaɾim/	40%	12.70%
/ʕimsˤim/	18.60%	11.70%

Table 6.29 shows that the name /waahid/ was chosen with the highest percentage by male participants and the name /jaahid/ by female participants. These names have glides /w/ and /j/ as name-initial, /h/ as a syllable-initial, vowel /aa/ as a syllable-final and /d/ as a name-final.

It is observed that the hypothesis applied more to female names; the more heavily female-weighted a name is, the more preferred it is by participants, especially male participants. Besides gender, to study the impact of age on the participants' choices, the overall choices have been divided according to age and gender as previously explained in Table 6.11. The two main groups; RDS male and female participants, were classified into four different groups; younger male and younger female, older male and older female participants, as shown in Tables 6.30 and 6.31. Heavily gender-weighted names are highlighted.

Table 6.30: RDS participants' preferences of female names in different age and gender groups				
1-	**younger RDS male**	**older RDS male**	**younger RDS female**	**older RDS female**
/tiitaa/	39%	50.00%	25.30%	33.30%
/zutin/	9.70%	8.80%	22.20%	7.60%
/zuɾaa/	34.10%	17.60%	22.20%	38.40%
/tuɾin/	9.70%	14.70%	23.80%	15.30%
/ziiɾin/	7.30%	8.80%	6.30%	5.10%
2-				
/ ʤubaa/	29.20%	8.80%	22.20%	20.50%
/ʤuti/	9.70%	5.80%	17.40%	20.50%
/lubi/	14.60%	20.50%	28.50%	7.60%
/liitaa/	36.50%	58.80%	12.60%	46.10%
/ʤiibi/	9.70%	5.80%	19%	5.10%
3-				
/ɾiiman/	31.70%	55.80%	26.90%	46.10%
/ɾuusiɾ/	21.90%	2.90%	19%	12.80%
/niisiɾ/	19.50%	0	9.50%	7.60%
/nuusin/	19.50%	23.50%	20.60%	23.00%
/nuumiɾ/	4.80%	5.80%	7.90%	5.10%
/niisaɾ/	2.40%	8.80%	15.80%	7.60%
4-				
/biijaan/	48.70%	64.70%	41.20%	64%
/fiikaa/	9.70%	14.70%	15.80%	17.90%
/fuukin/	4.80%	2.90%	4.70%	
/buuki/	12.10%	2.90%	15.80%	7.60%
/fuuja/	9.70%	2.90%	9.50%	5.10%
/fiiki/	14.60%	11.70%	12.60%	5.1
5-				
/ʃiimaah/	65.80%	76.40%	52.30%	84.60%
/kunmaaf/	12.10%	5.80%	11.10%	2.50%
/ʃunsaaf/	4.80%	5.80%	14.20%	2.50%
/kiisaaf/	9.70%	11.70%	15.80%	7.60%
/kunsaah/	7.30%		6.30%	2.50%

Table 6.31: RDS participants' preferences of male names in different age and gender groups				
1-	**younger male**	**older male**	**younger female**	**older female**
/jiɾis/	31.70%	52.90%	17.40%	28.20%
/jubi/	19.50%	14.70%	33.30%	5.10%
/dʒibi/	7.30%	2.90%	15.80%	7.60%
/dʒuɾis/	24.30%	14.70%	11.10%	20.50%
/dʒuɾi/	12.10%		9.50%	7.60%
/dʒubis/	4.80%	14.70%	12.60%	5.10%
2-				
/wuɾin/	17%	14.70%	30.10%	20.50%
/waahid/	48.70%	58.80%	19%	43.50%
/zuɾid/	7.30%	5.80%	4.70%	
/zaaɾin/	21.90%	14.70%	23.80%	26%
/zuhin/	4.80%	5.80%	22.20%	10.20%
3-				
/naasiɾ/	41.40%	52.90%	38%	58.90%
/ħuusiɾ/	41.40%	8.80%	12.60%	2.50%
/nuuɾiɾ/	19.50%	8.80%	33.30%	12.80%
/ħaaɾim/	21.90%	14.70%	7.90%	17.90%
/nuusim/	12.10%	14.70%	7.90%	7.60%
4-				
/jaahid/	46.30%	55.80%	26.90%	48.70%
/faaki/	21.90%	14.70%	31.70%	20.50%
/juuki/	17%	8.80%	17.40%	15.30%
/fuukid/	7.30%	18%	14.20%	12.80%
/fuuhi/	7.30%	2.90%	9.50%	2.50%
5-				
/ʕimsˤim/	36.50%	44.10%	12.60%	15.30%
/ʕunsaaf/	17%	23.50%	36.50%	12.80%
/kunsˤaaf/	17%	14.70%	14.20%	12.80%
/kunsaam/	2.40%	11.70%	12.60%	28.20%
/kinsif/	9.70%	2.90%	11.10%	20.50%
/kumsaaf/	17%	2.90%	12.60%	10.20%

Overall, all groups were more decisive about their preferred female names than male names, as shown in Table 6.31.

Phonological assignment of names preference seems to be affected by age and gender; older male participants have chosen heavily male- and female-weighted names as their preferred names. However, age and gender had a different impact on preference in male and female names. Older male participants had chosen heavily female-weighted names with percentages higher than older female participants followed by younger male participants followed by younger female participants. This can be interpreted in the pattern: older male participants > older female participants > younger male participants > younger female participants.

Older male participants had chosen the heavily male-weighted names with more preferences than other groups followed by younger male participants, followed by older female participants followed by younger female participants. This can be interpreted in the pattern: older male participants > younger male participants > older female participants > younger female participants. As found earlier in explaining the gender assignments of names, besides the impact of age and gender, younger female participants appeared to be less engaged in replying to the questionnaire itself.

6.4.3 Favourite Names

For the last question in the questionnaire, participants were asked to provide their top five favourite male and female names. All of the top 10 female names provided were also among the top most common names in Jordan in 2017. Names /saaɾah/, /liin/, /maɾjam/, /lajaan/, /ʤuuɾii/ were among the top 10 most common names. This finding shows that that the list of common female names that I used to create the pseudonames is representative of the participants' preferences of female names. The name /saaɾah/ was at the top of the preferred names and was chosen 38 times. Compared to the pseudoname name /ʃiimaah/ that was chosen with the highest percentages by male and female participants as the most preferred female-sounding pseudoname, both names have two syllables, the syllable structure CVV as the first syllable, and sound /h/ as the name final.

Table 6.32: Participants' top 10 favourite female names (RDS)

	Name	Frequencies
1	/saaɾah/	38
2	/liin/	16
3	/nuuɾ/	16
4	/maɾjam/	15
5	/lajaan/	14
6	/ʤuuɾii/	12
7	/jaɾaa/	12
8	/talaa/	10
9	/baanaa/	10

Table 6.33: Participants' top 10 favourite male names (RDS)

	Name	Frequencies
1	/ʕumaɾ /	42
2	/juusif/	29
3	/ʔaadam/	21
4	/ʕalii/	17
5	/zeed/	15
6	/xaalid/	14
7	/tajm/	13
8	/zeen/	13
9	/kaɾam/	12
10	/ʤawaad/	12

All the names shown in Tables 6.32 and 6.33 are among the most popular 100 male names in Jordan 2017. Names /juusif/, /ʔaadam/, /ʕumaɾ /, /kaɾam/ and /zeed/, are also among the top 10 most common names in Jordan in 2017. This finding shows that the list of common male names that I used to create the pseudonames is representative of the participants' preferences of male names. Four of these names have the exact same structure CVV.CVC of the names /waahid/ and /jaahid/ that were chosen with the highest percentages by male and female participants' as their preferred male-sounding pseudonames. Three names of the ten end in /d/ sound.

6.5 Conclusions

This chapter investigated the perception of the phonology of names by RDS participants. It also tested the following hypotheses:

1- The gender of names can be predicted based on their phonology.
2- Names that have more male-associated or female-associated features are evaluated more positively.

Overall, results supported the two hypotheses; RDS participants were able to assign gender to the pseudo-names relying on their phonology. Age and gender were found to have an impact on gender assignment; the older male group assigned the names to the expected gender more than other groups.

The female-weighted name /ʃiimaah/ and the male-weighted name /kinsif/ were assigned to the predicted gender with the highest percentages. Based on the RDS responses, besides changing all features of neutral names, short vowel /i/ is a strong male name feature, and syllable-initial /j/ is a strong female names feature.

Interpreting the names' MGS, participants preferred heavily gender-weighted names, especially female names. The name /ʃiimaah/ was chosen as the preferred female-weighted name while the names /waahid/ and /jaahid/ were chosen with the highest percentages by male and female participants' as their preferred male-sounding name. Analysing MGS also revealed that name-final closed syllable, syllable-final /m/ and short vowel /i/ triggered masculine scoring while name-final open syllable, name-initial /aa/, name-initial /l/ and syllable-final /ii/ triggered feminine scoring.

Age and gender affected heavily female-weighted names preferences in different way from heavily male-weighted names

The results also revealed that participants' choices of their favourite names were consistent with the data used to create the pseudonames. It is also found that the favourite names show some phonological likeness to the preferred pseudonames.

Chapter 7
Cross-Linguistic Perception of Names

7.1 Introduction

This chapter investigates the cross-linguistic perception of Jordanian first names and answers one of the research questions whether there are similar associations between Arabic and English speakers regarding sound patterns in names. Building on the analysis in Chapter 6, this chapter considers the responses of Urban Dialect speakers (henceforth UDS) and English native speakers (henceforth ENS) to the questionnaire. It also tests the study hypotheses among UDS and ENS participants and investigates any association with RDS responses. The hypotheses are: 1) The gender of names can be predicted based on their phonology and 2) Names that have more male-associated or female-associated features are evaluated more positively.

The first part of the chapter analyses the Urban dialect speakers' responses, while the second part analyses the English native speakers' responses. As in Chapter 6, the analysis of the two groups consists of three parts: gender perception of names, naming preference and favourite names. Each part is dedicated to analysing one of the questionnaire sections.

7.2 Urban Dialect Speaking Participants

This part of the analysis includes the UDS participants. A total of 114 UDS took part in the questionnaire, which makes up 38.2% of the total number of Jordanian participants. Although RDS participants' are the main interest of this study, the UDS participants' responses were also analysed to test the hypotheses of the study and to investigate any remarkable likeness and any cross-dialectal similarities or differences between RDS and UDS participants' responses.

Figures 7.1 and 7.2 show that the majority of UDS participants are female and the majority of the participants belong to the age group 16-25. As figure 7.2 shows, none of the male and the female participants belongs to the age group 55+.

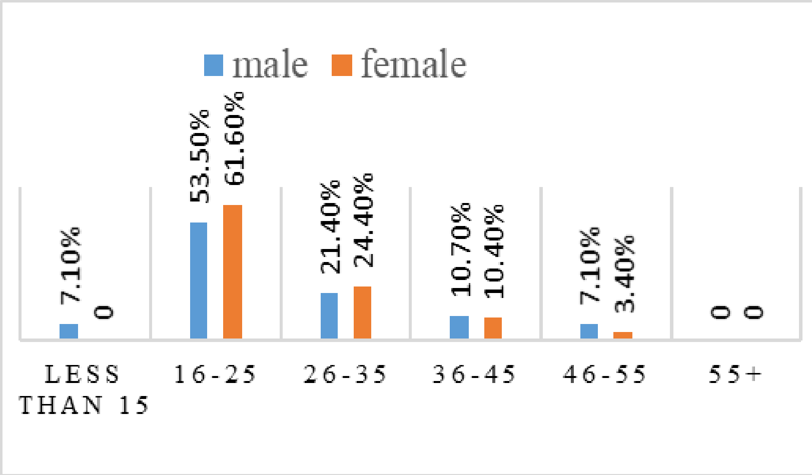

Figure 7.1: UDS participants' age group and gender

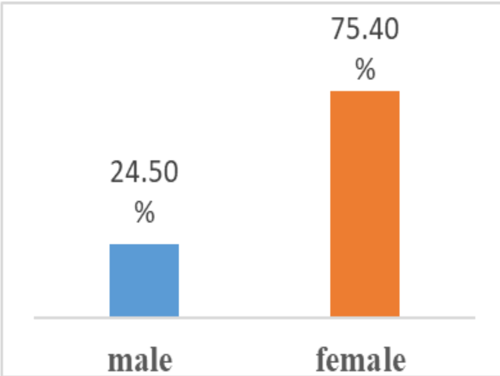

Figure 7.2: UDS participants' gender

7.3 Analysis of UDS Participants' Responses

This main part of the analysis is divided into three subparts. The first one analyses UDS participants' responses to section 2 of the questionnaire; questions 1-29. This section investigates gender perception and gender assignment. The second part of the analysis is dedicated to section 3 of the questionnaire that examines the naming preference. The third part analyses the fourth section of the questionnaire that investigates participants' favourite names.

7.3.1 Gender Perception of Names

This part includes two sections; the first describes the responses to the questionnaire in general. The second section, on the other hand, analyses the responses mean gender score.

7.3.1.1 Survey Responses

The analysis focuses on the same data sets as in Chapter 6. Each set appears in a table showing the changed feature, the name and the percentages of choices for male and female participants. The pseudonames that are identified as male-weighted names appear in the right column, while the pseudonames that are identified as female-weighted names appear in the left column. The expected choices are highlighted as well.

The first neutral name is /zuɾin/. Table 7.1 shows that the majority of participants' responses were consistent with the expected classification of names into male or female names. This finding is especially true for the names that are heavily gender-weighted, /waahid/ for a male name and /tiitaa/ for a female name. Results show that 48.2% of participants have chosen /waahid/ as a male name, and 64.9% have chosen /tiitaa/ as female name.

Table 7.1: Neutral name /zuɾin/ (UDS)				
	male-weighted		**female-weighted**	
Syllable-final	/zaaɾin/		/ziiɾin/	
Male	53	46.4%	46	40.3%
Female	42	36.8%	51	44.7%
Neither male nor female	19	16.6%	17	14.9%
Name-initial	/juɾin/		/tuɾin /	
Male	51	44.7%	54	47.3%
Female	47	41.2%	47	41.2%
Neither	16	14%	13	11.4%
Name-final	/zuɾid/		/zuɾaa/	
Male	52	45.6%	23	20.1%
Female	39	34.2%	74	64.9%
Neither male nor female	23	20.1%	17	14.9%
Syllable-initial	/zuhin/		/zutin/	
Male	46	40.3%	42	36.8%
female	51	44.7%	48	42.1%
Neither male nor female	17	14.9%	24	21%
All features	/waahid/		/tiitaa/	
Male	55	48.2%	25	21.9%
Female	39	34.2%	74	64.9%
Neither male nor female	20	17.5%	15	13.1%

Regarding the second neutral name /ʤubi/, Table 7.2 shows that the majority of participants' responses were consistent with the expected classification of names into male or female names except for the male-weighted name /ʤuɾi/ that was assigned as a female-weighted name by 64.9% compared to 23.6% who assigned it as expected to male gender. This is consistent with RDS gender assignment of this name as shown in Chapter 6. Heavily male-weighted name /jiɾis/ and heavily female-weighted name /liita/ were assigned as expected by the highest percentages of participants.

Table 7.2: Neutral name: /ʤubi/ (UDS)				
	male-weighted		**female-weighted**	
Name-initial	/jubi/		/lubi/	
Male	49	42.9%	28	24.5%
female	48	42.1%	68	59.6%
Neither male nor female	17	14.9%	18	15.7%
Syllable-structure	/ʤuɾis/		/ʤiibaa/	
Male	50	43.8%	36	31.5%
Female	50	43.8%	63	55.2%
Neither male nor female	14	12.2%	15	13.1%
Name-final	/ʤubis/		/ʤubaa/	
Male	52	45.6%	31	27.1%
female	38	33.3%	62	54.3%
Neither male nor female	24	21%	21	18.4%
Syllable-initial	/ʤuɾi/		/ʤuti/	
Male	27	23.6%	35	30.7%
female	74	64.9%	62	54.3%
Neither male nor female	13	11.4%	17	14.9%
Syllable-final	/ʤibi/		/ʤiibi/	
Male	34	29.8%	33	28.9%
female	61	53.5%	57	50%
Neither male nor female	19	16.6%	24	21%
All features	/jiɾis/		/liitaa/	
Male	58	50.8%	27	23.6%
Female	42	36.8%	73	64%
Neither male nor female	14	12.2%	14	12.2%

The third neutral name is /nuusir/. Table 7.3 shows that the majority of participants' responses were consistent with the expected classification of names into male or female names except for the male-weighted name /nuuɾiɾ/ and the female-weighted name /nuumiɾ/. Male-weighted name /nuuɾiɾ/ was assigned to the male gender by only 35% of the participants, compared to 50.8% who assigned it to the female gender. Female-weighted name /nuumiɾ/ was assigned to female gender by only 28% compared to 50% of participants who assigned to a male gender. Both of these names were created by changing the syllable-initial of the neutral name. Syllable-initial /ɾ/ did not trigger strong masculine features and syllable-initial /m/ did not trigger strong feminine assignments. This is consistent with the RDS responses in Chapter 6.

Table 7.3: Neutral name: /nuusiɾ/ (UDS)				
	male-weighted		**female-weighted**	
Name-initial	**/ħuusiɾ/**		**/ɾuusiɾ/**	
Male	61	53.5%	44	38.5%
Female	34	29.8%	49	42.9%
Neither male nor female	19	16.6%	21	18.4%
Name-final	**/nuusim/**		**/nuusin/**	
Male	50	43.8%	33	28.9%
Female	46	40.3%	57	50%
Neither male nor female	18	15.7%	24	21%
Syllable-final	**/naasiɾ/**		**/niisiɾ/**	
Male	67	58.7%	45	39.4%
Female	30	26.3%	47	41.2%
Neither male nor female	15	13.1%	22	19.2%
Vowels	**/naasiɾ/**		**/niisaɾ/**	
Male	66	57.8%	48	42.1%
Female	33	28.9%	48	42.1%
Neither male nor female	15	13.1%	18	15.7%
Syllable-initial	**/nuuɾiɾ/**		**/nuumiɾ/**	
Male	40	35%	57	50%
Female	58	50.8%	32	28%
Neither male nor female	16	14%	25	21.9%
All features	**/ħaaɾim/**		**/ɾiiman/**	
Male	55	48.2%	31	27.1%
Female	38	33.3%	70	61.4%
Neither male nor female	21	18.4%	13	11.4%

Male-weighted name /naasiɾ/ was assigned to male gender by the highest percentages in this name group. This name was created by changing the syllable-final of the neutral name from long vowel /uu/ into long vowel /aa/. On the other hand, the heavily female-weighted name /ɾiiman/ was assigned to the female gender by the highest percentage.

The fourth neutral name is /fuuki/. Results show that most of the responses were consistent with the expected classification of female-weighted names but not all male-weighted names. Three of the six male-weighted names were assigned to the gender as expected. Heavily male-weighted name /jaahid/ was chosen as a male name with the highest percentages of male names by 60% of the participants while the female-weighted name /fiiki/ was selected by the highest percentages among female weighted names. This name was created by changing the syllable-final of the neutral name /uu/ into the vowel /ii/. Syllable-final /ii/ triggered highest feminine assignment for UDS while the syllable-initial /j/ in /fuuja/ triggered the highest feminine assignment for RDS.

Table 7.4: Neutral name is /fuuki/ (UDS)				
	male-weighted		**female-weighted**	
Syllable-final	**/faaki/**		**/fiiki/**	
Male	30	26.3%	22	19.2%
Female	55	48.2%	76	66.6%
Neither male nor female	29	25.4%	16	14%
Vowels	**/faaki/**		**/fiikaa/**	
Male	29	25.4%	33	28.9%
Female	64	56.1%	69	60.5%
Neither male nor female	21	18.4%	12	10.5%
Name-final/syllable structure)	**/fuukid/**		**/fuukin/**	
Male	50	43.8%	45	39%
Female	40	35%	38	33.3%
Neither male nor female	24	21%	31	27.1%
Syllable-initial	**/fuuhi/**		**/fuuja/**	
Male	30	26.3%	29	25.4%
Female	56	49.1%	63	55.2%
Neither male nor female	28	24.5%	22	19.2%
Name-initial	**juuki/**		**/buuki/**	
Male	62	54.3%	29	25.4%
Female	41	35.9%	68	59.6%
Neither male nor female	11	9.6%	17	14.9%
All features	**/jaahid/**		**/biijaan/**	
Male	69	60.5%	42	36.8%
Female	29	25.4%	57	50%
Neither male nor female	16	14%	15	13.1%

For the last neutral name /kunsaaf/, Table 7.5 shows that 7 of 12 names were assigned to the gender as expected. The heavily female-weighted name /ʃiimaah/ was assigned as a female name with a percentage of 71%, which is consistent with RDS responses.

Table 7.5:Neutral name /kunsaaf/ (UDS)

Name-initial	**/ʕunsaaf/**		**/ʃunsaaf/**	
Male	53	46.4%	28	24.5%
Female	44	38.5%	62	54.3%
Neither male nor female	17	14.9%	24	21%
Vowels	**kinsif/**		**/kiisaaf/**	
Male	40	35%	46	40.3%
Female	48	42.1%	41	35.9%
Neither male nor female	26	22.8%	27	23.6%
Syllable-final	**/kumsaaf/**		**/kiisaaf/**	
Male	50	43.8%	38	33.3%
Female	37	32.4%	52	45.6%
Neither male nor female	27	23.6%	24	21%
Syllable-initial	**/kunsˤaaf/**		**/kunmaf/**	
Male	26	22.8%	43	37.7%
Female	60	52.6%	42	36.8%
Neither male nor female	28	24.5%	29	25.4%
Name-final	**/kunsaam/**		**/kunsaah/**	
Male	34	29.8%	27	23.6%
Female	58	50.8%	65	57%
Neither male nor female	22	19.2%	22	19.2%
All features	**/ʕimsˤim/**		**/ʃiimaah/**	
Male	43	37.7%	12	10.5%
Female	30	26.3%	81	71%
Neither male nor female	41	35.9%	12	10.5%

Overall most of the names that were created from neutral names /zuɾin/, /ʤubi/, /nuusiɾ/ and /fuuki/ were assigned to the gender as expected especially with female-weighted names, although often not very strongly. Most of the names that were created from the neutral name /kunsaaf/ were not assigned to gender as expected.

Table 7.6 shows the names that are assigned to their gender as expected with highest percentages in each neutral name group. It can be observed that the majority of the names in Table 7.6 are heavily gender-weighted names, in which all features of neutral names were changed. Differences can be noted with the male-weighted names /naasiɾ/,

/ʕunsaaf/, and female-weighted name /fiiki/. Syllable-final /aa/ and name initial /ʕ/ seem to be strong masculine gender triggers, and the vowel /ii/ in syllable-final position is a strong feminine gender trigger.

Table 7.6: Male and female-weighted names with highest percentages (UDS)

Male-weighted names	percentage	Feature changed	Female-weighted names	percentage	Feature changed
/jiɾis/	50.8%	All features	/liitaa/	64%	All features
/waahid/	48.2%	All features	/tiitaa/	64.9%	All features
/ʕunsaaf/	46.4%	Name-initial	/ɾiiman/	61.4%	All features
/jaahid/	60.5%	All features	/fiiki/	66.6%	Syllable-final
/naasiɾ/	58.7%	Syllable-final	/ʃiimaah/	71%	All features

It is worth mentioning that the male weighted /jiɾis/, /waahid/ and /jaahid/ and female-weighted names /liitaa/, /tiitaa/, /ɾiiman/ and /ʃiimaah/ were also chosen by RDS with the highest percentages.

7.3.1.2 Mean Gender Score

As applied in Chapter 6, in order to test the hypothesis that participants inferred the gender of pseudonames relying on their phonology, participants' responses were converted into numerical values for statistical analysis using the same process as described previously.

Mean gender assignments for each of the 58 pseudonames in responses of all UDS participants are shown in Table 7.7, names that received feminine scoring are highlighted in orange while names received masculine scoring are highlighted in blue. When the score contradicts the predicted gender, it is highlighted in yellow.

Table 7.7: Mean gender assignments for pseudonames for all UDS participants

	Feature manipulated	Name	Expected gender	MGS
1: A	Name-initial	/jubi/	Male	0
1: B	Name-initial	/lubi/	Female	0.675439
2: A	Name-initial	/tuɾin/	Female	0.469298
2: B	Name-initial	/juɾin/	Male	0.482456
3: A	Name-initial	/ħuusiɾ/	Male	0.381579
3: B	Name-initial	/ɾuusiɾ/	Female	0.52193
4: A	Syllable-initial	/kunsˤaaf/	Male	0.649123
4: B	Syllable-initial	/kunmaaf/	Female	0.495614
5: A	Name-initial	/buuki/	Female	0.671053
5: B	Name-initial	/juuki/	Male	0.592105
6: A	Name-initial	/ʕunsaaf/	Male	0.460526
6: B	Name-initial	/ʃunsaaf/	Female	0.649123
7: A	All features	/ʕimsˤim/	Male	0.442982
7: B	All features	/ʃiimaah/	Female	0.763158
8: A	All features	/biijaan/	Female	0.565789
8: B	All features	/jaahid/	Male	0.324561
9: A	All features	/ħaaɾim/	Male	0.425439
9: B	All features	/ɾiiman/	Female	0.671053
10: A	Name-final	/nuusim/	Male	0.482456
10: B	Name-final	/nuusin/	Female	0.605263
11: A	Syllable-final	/kumsaaf/	Male	0.442982
11: B	Syllable-final	/kiisaaf/	Female	0.561404
12: A	Syllable-final	/fiiki/	Female	0.736842
12: B	Syllable-final	/faaki/	Male	0.609649
13: A	Syllable-final	/ʤibi/	Male	0.618421
13: B	Syllable-final	/ʤiibi/	Female	0.605263
14: A	Syllable-final	/zaaɾin/	Male	0.451754
14: B	Syllable-final	/ziiɾin/	Female	0.52193
15: A	Syllable-final	/niisiɾ/	Female	0.508772

15: B	Syllable-final	/naasiɾ/	Male	0.337719
16: A	Name-final	/zuɾaa/	Female	0.723684
16: B	Name-final	/zuɾid/	Male	0.442982
17: A	Name-final	kunsaah/	Female	0.666667
17: B	Name-final	/kunsaam/	Male	0.605263
18: A	Syllable-initial	/zutin/	Female	0.526316
18: B	Syllable-initial	/zuhin/	Male	0.52193
19: A	Name-final	/ʤubaa/	Female	0.635965
19: B	name final	/ʤubis/	Male	0.438596
20: A	all features	/waahid/	Male	0.429825
20: B	all features	/tiitaa/	Female	0.714912
21: A	Vowels	/niisaɾ/	Female	0.5
21: B	Vowels	/naasiɾ/	Male	0.355263
22: A	Syllable-initial	/ʤuti/	Female	0.618421
22: B	Syllable-initial	/ʤuɾi/	Male	0.70614
23: A	Vowels	/faaki/	Male	0.653509
23: B	Vowels	/fiikaa/	Female	0.657895
24: A	Syllable-initial	/fuuhi/	Male	0.614035
24: B	Syllable-initial	/fuuja/	Female	0.649123
25: A	Syllable-structure	/ʤuɾis/	Male	0.5
25: B	Syllable-structure	/ʤiibaa/	Female	0.618421
26: A	all features	/liitaa/	Female	0.701754
26: B	all features	/jiɾis/	Male	0.429825
27: A	Syllable-initial	/nuuɾiɾ/	Male	0.578947
27: B	Syllable-initial	/nuumiɾ/	Female	0.390351
28: A	Name-final/syllable-structure	/fuukid/	Male	0.45614
28: B	Name-final/syllable-structure	/fuukin/	Female	0.469298
29: A	Vowels	/kinsif/	Male	0.535088
29: B	Vowels	/kiisaaf/	Female	0.47807

It is observed that only 13.7% of the overall assignments of names to gender met the expectation. Most of the names mean gender score show that names were in the neutral range. Male-weighted name /ʤuɾi/ that was created by changing the syllable-initial of the neutral name from /b/ into /ɾ/ received a feminine score with MGS of 0.70614. Syllable-initial /ɾ/ that is supposed to be male-weighted feature did not trigger strong masculine score for UDS and male-weighted name /nuuɾiɾ/ that has /ɾ/ as syllable-initial had a neutral scoring. This is consistent with RDS responses. The male weighted /jubi/, which was created by changing the name-initial of the neutral name from /ʤ/ into /j/, received a masculine score with a MGS of 0. For UDS, name-initial /j/ is the strongest trigger of masculine score. On the other hand, heavily female-weighted name /ʃiimaah/ scored the highest MGS of 0.763158.

As explained in Chapter 6, age and gender are socially and linguistically relevant factors in linguistics. In Chapter 6, the responses were classified according to the age and gender of the participants. However, in this chapter, responses are classified according to gender only. This choice is made because I am following the same analysis structure for UDS and ENS, and due to the small number of ENS participants, it would not have resulted in sufficient number of participants in each group. The two main groups presented here are UDS male and female participants:

Table 7.8: Mean gender assignments for pseudonames for UDS participants

	Feature manipulated	Name	Expected gender	MGS UDS male	MGS UDS female
1: A	Name-initial	/jubi/	Male	0.5	0.494186
1: B	Name-initial	/lubi/	Female	0.589286	0.703488
2: A	Name-initial	/tuɾin/	Female	0.321429	0.517442
2: B	Name-initial	/juɾin/	Male	0.535714	0.465116
3: A	Name-initial	/ħuusiɾ/	Male	0.357143	0.389535
3: B	Name-initial	/ɾuusiɾ/	Female	0.392857	0.563953
4: A	Syllable-initial	/kunsˤaaf/	Male	0.517857	0.69186
4: B	Syllable-initial	/kunmaaf/	Female	0.482143	0.5

5: A	Name-initial	/buuki/	Female	0.696429	0.662791
5: B	Name-initial	/juuki/	Male	0.642857	0.575581
6: A	Name-initial	/ʕunsaaf/	Male	0.428571	0.47093
6: B	Name-initial	/ʃunsaaf/	Female	0.553571	0.680233
7: A	All features	/ʕimsˤim/	Male	0.446429	0.44186
7: B	All features	/ʃiimaah/	Female	0.642857	0.802326
8: A	All features	/biijaan/	Female	0.625	0.546512
8: B	All features	/jaahid/	Male	0.321429	0.325581
9: A	All features	/ħaarim/	Male	0.428571	0.424419
9: B	All features	/ɾiiman/	Female	0.464286	0.738372
10: A	Name-final	/nuusim/	Male	0.589286	0.447674
10: B	Name-final	/nuusin/	Female	0.589286	0.610465
11: A	Syllable-final	/kumsaaf/	Male	0.446429	0.44186
11: B	Syllable-final	/kiisaaf/	Female	0.553571	0.563953
12: A	Syllable-final	/fiiki/	Female	0.75	0.732558
12: B	Syllable-final	/faaki/	Male	0.571429	0.622093
13: A	Syllable-final	/ʤibi/	Male	0.571429	0.633721
13: B	Syllable-final	/ʤiibi/	Female	0.5	0.639535
14: A	Syllable-final	/zaaɾin/	Male	0.410714	0.465116
14: B	Syllable-final	/ziiɾin/	Female	0.607143	0.494186
15: A	Syllable-final	/niisiɾ/	Female	0.535714	0.5
15: B	Syllable-final	/naasiɾ/	Male	0.285714	0.354651
16: A	Name-final	/zuɾaa/	Female	0.625	0.755814
16: B	Name-final	/zuɾid/	Male	0.446429	0.44186
17: A	Name-final	/kunsaah/	Female	0.660714	0.668605
17: B	Name-final	/kunsaam/	Male	0.553571	0.622093
18: A	Syllable-initial	/zutin/	Female	0.410714	0.563953
18: B	Syllable-initial	/zuhin/	Male	0.357143	0.575581
19: A	Name-final	/ʤubaa/	Female	0.589286	0.651163
19: B	Name-final	/ʤubis/	Male	0.535714	0.406977
20: A	All features	/waahid/	Male	0.482143	0.412791

20: B	all features	/tiitaa/	Female	0.553571	0.767442
21: A	Vowels	/niisaɾ/	Female	0.553571	0.482558
21: B	Vowels	/naasiɾ/	Male	0.357143	0.354651
22: A	Syllable-initial	/ʤuti/	Female	0.5	0.656977
22: B	Syllable-initial	/ʤuɾi/	Male	0.607143	0.738372
23: A	Vowels	/faaki/	Male	0.625	0.662791
23: B	Vowels	/fiikaa/	Female	0.607143	0.674419
24: A	Syllable-initial	/fuuhi/	Male	0.696429	0.587209
24: B	Syllable-initial	/fuuja/	Female	0.767857	0.610465
25: A	Syllable-structure	/ʤuɾis/	Male	0.553571	0.482558
25: B	Syllable-structure	/ʤiibaa/	Female	0.464286	0.668605
26: A	All features	/liitaa/	Female	0.642857	0.72093
26: B	All features	/jiɾis/	Male	0.589286	0.377907
27: A	Syllable-initial	/nuuɾiɾ/	Male	0.5	0.604651
27: B	Syllable-initial	/nuumiɾ/	Female	0.303571	0.418605
28: A	Name-final/Syllable-structure	/fuukid/	Male	0.535714	0.430233
28: B	Name-final/Syllable-structure	/fuukin/	Female	0.428571	0.482558
29: A	Vowels	/kinsif/	Male	0.589286	0.517442
29: B	Vowels	/kiisaaf/	Female	0.303571	0.534884

It can be observed from Table 7.8 that the majority of names did not receive the expected gender scoring and most of names received neutral ratings. Table 7.9 shows that names received the expected gender scoring more in female participants' responses.

Table 7.9: MGS assigned to gender (UDS)			
Participants	Names with MGS as expected	Names with MGS contradicting expectation	Names with Neutral ratings
UDS Male participants	5.1%	5.1%	89.6%
UDS female participants	13.7%	1.7%	84.4%

As shown in Table 7.8, male-weighted names /jaahid/ and /naasiɾ/, and female-weighted name /fuuja/ were the only names assigned to the gender as expected by UDS male participants with MGS of 0.321429 and 0.285714 and 0.767857 respectively. Vowel /aa/ in the syllable-final position triggered strong masculine scoring among UDS male participants only in /naasiɾ/ and the syllable-initial /j/ triggered the feminine score only in /fuuja/. No generalization can be made about what triggered strong masculine or feminine features in just 3 names among 58 names.

For UDS female participants, the heavily-male weighted name /jaahid/ was the only name that was assigned as a male name as expected with a MGS of 0.325581 while 8 female-weighted names were assigned as female names as expected. Heavily female-weighted name /ʃiimaah/ scored the highest with MGS of 0.802326. However, among UDS male and female responses, all the female-weighted names that received a score consistent with the expected gender were either created by changing all the features of the neutral name or have an open-syllable name-finally. The same applies to male-weighted names; all the male-weighted names that received a score consistent with the expected gender were either created by changing all the features of the neutral name or have a closed-syllable name-finally. The only generalization that I can suggest is that open syllables name-finally triggered feminine scoring and closed final syllable triggered masculine scoring, although not very strongly.

Some names received a score that contradicted the expected gender assignment as shown in Table 7.10.

Table 7.10: Names with MGS contradicting expectation (UDS)				
Feature manipulated	**Name**	**Expected gender**	**MGS UDS male**	**MGS UDS female**
Vowels	/kiisaaf/	Female	0.303571	0.534884
Syllable-initial	/nuumiɾ/	Female	0.303571	0.418605
Syllable-initial	/ʤuɾi/	Male	0.607143	0.738372
Name-initial	/tuɾin/	Female	0.321429	0.517442

Table 7.10 shows that vowels /ii/, name-initial /t/ triggered masculine score in female-weighted names /kiisaaf/ and /tuɾin/, while syllable-initial /m/ and /ɾ/ triggered feminine score in /nuumiɾ/ and /ʤuɾi/. This cannot be generalised over all UDS responses due to the lack of the number of names that received the expected gender scoring. However, it can be observed that all the female-weighted names that received a scoring contradicting the expected gender end in consonants (closed syllable) and the male-weighted name /ʤuɾi/ that received a feminine scoring ends in a vowel (open syllable). Consistent with the previous generalization about UDS responses, name-final syllable structure is a strong gender trigger.

7.3.2 Naming Preference

Analysis of UDS responses to the second question of the questionnaire follow the same procedures of analysing RDS responses in Chapter 6. This question was created to test the hypothesis that names created with changing all features would be preferred. Responses were analysed based on the gender of the participants. Tables 7.11 and 7.12 show the RDS participants’ choices. Each group shows the names that were created from the same neutral name and the heavily gender-weighted name in each group is highlighted.

Table 7.11: UDS participants' preferences (female names)		
	Male participants	**Female participants**
/tiitaa/	17.80%	26.70%
/zutin/	32.10%	9.30%
/zuɾaa/	14.20%	36%
/tuɾin/	25%	17.40%
/ziiɾin/	10.70%	10.40%
/ʤubaa/	10.70%	12.70%
/ʤuti/	21.40%	18.60%
/lubi/	17.80%	29%
/liitaa/	17.80%	30.20%
/ʤiibi/	32.10%	9.30%
/ɾiiman/	42.80%	47.60%
/ɾuusiɾ/	17.80%	12.70%
/niisiɾ/	14.20%	10.40%
/nuusin/	10.70%	19.70%
/nuumiɾ/	3.50%	4.60%
/niisaɾ/	10.70%	4.60%
/biijaan/	42.80%	41.80%
/fiikaa/	14.20%	24.40%
/fuukin/	3.50%	2.30%
/buuki/	7.10%	5.80%
/fuuja/	7.10%	12.70%
/fiiki/	25%	12.70%
-		
/ʃiimaah/	42.80%	66.20%
/kunmaf/	21.40%	4.60%
/ʃunsaaf/	7.10%	8.10%
/kiisaaf/	21.40%	15.11%
/kunsaah/	7.1%	5.80%

Table 7.12: UDS participants' preferences (male names)		
	Male participants	**Female participants**
/jiɾis/	25%	34.80%
/jubi/	14.20%	12.70%
/ʤibi/	32.10%	12.70%
/ʤuɾis/	14.20%	22%
/ʤuɾi/	21.40%	30.20%
/ʤubis/	7.10%	9.30%
/wuɾin/	25%	15.11%
/waahid/	50%	32.50%
/zuɾid/	10.70%	3.40%
/zaaɾin/	3.50%	32.50%
/zuhin/	10.70%	16.20%
/naasiɾ/	35.70%	0
/ħuusiɾ/	7.10%	47.60%
/nuɾiɾ/	10.70%	2.30%
/ħaaɾim/	14.20%	25.50%
/nuusim/	32.10%	5.80%
/jaahid/	39.20%	52.30%
/faaki/	10.70%	18.60%
/juuki/	14.20%	15.10%
/fuukid/	21.40%	6.90%
/fuuhi/	14.20%	6.90%
-		
/ʕimsˤim/	10.70%	6.90%
/ʕunsaaf/	17.80%	33.70%
/kunsˤaaf/	7.10%	13.90%
/kunsaam/	14.20%	22%
/kinsif/	17.80%	13.90%
/kumsaaf/	32.10%	9.30%

Table 7.11 reveals that most of UDS female responses were consistent with the hypothesis, especially in their choice of female names. Heavily female-weighted names /tiitaa/, /liitaa/, /ɾiiman/, /biijaan/, /ʃiimaah/ were chosen by female participants as their preferred female name scoring the highest percentages. On the other hand, male participants chose female weighted /zutin/ and /ʤiibi/ in group 1 and 2 instead the heavily weighted /liitaa/ and /tiitaa/

The name /ʃiimaah/ was chosen with the highest percentages by male and female participants. The name was created using the female-sounding sound /ʃ/ as a name initial, vowel /ii/ as a syllable-final, /h/ as a name final, /m/ as a syllable-initial. The hypothesis applied more to female names; the more heavily female-weighted a name is, the more preferred it is by participants, especially female participants.

Regarding participants' preferences of male names, Table 7.12 shows that participants' responses were not fully consistent with the hypothesis. Female participants chose the heavily male-weighted names /jiɾis/, /waahid/, /jaahid/ as their preferred male names with higher preferences. However, the heavily male-weighted names /ħaaɾim/ and /ʕimsˤim/ were chosen by only 25.50% and 6.90% respectively.

Male participants, on the other hand have chosen heavily male-weighted names /waahid/ and /jaahid/ as their preferred male name with highest percentages in their groups. The names /jiɾis/, /ħaaɾim/ and /ʕimsˤim/were only chosen by 25%, 14.20 % and 10.70% respectively. Table 7.12 shows that the name /waahid/ was chosen with the highest percentage by male participants and the name /jaahid/ by female participants. These names have glides /w/ and /j/ as name initial, /h/ as a syllable-initial, vowel /aa/ as a syllable-final and /d/ as a name final. The same results were observed of RDS preferences of heavily male-weighted names.

7.3.3 Favourite Names

For the last question in the questionnaire, participants were asked to provide their top 5 favourite male and female names. All of the top 10 female names provided were also among the top most common names in Jordan in 2017. /saaɾah/, /zeenah/ and /salmaa/ are also among the top 10 most common names in Jordan in 2017

Table 7.13:Participants' top 10 favourite female names (UDS)		
	Name	**Frequencies**
1	/saaɾah/	19
2	/nuuɾ/	12
3	/zeenah/	12
4	/talaa/	10
5	/salmaa/	8
6	/danaa/	8
7	/layaan/	6
8	/ʃaam /	5
9	/ʤuud/	5
10	/ɾiim/	5

This finding shows that the list of common female names that I used to create the pseudonames was representative of the participants' preferences of female names. The name /saaɾah/ was at the top of the preferred names and was chosen 19 times. Compared to the pseudoname name /ʃiimaah/ that was chosen with the highest percentages by male and female participants as the most preferred female-sounding pseudoname, both names have two syllables, the syllable structure CVV as the first syllable, and sound /h/ as the name-final.

Regarding male names, all the names shown in Table 7.14 are among the most popular 100 male names in Jordan 2017. Names /juusif/, /ʔaadam/, /ʕumaɾ/ and /kaɾam/, are also among the top 10 most common names in Jordan in 2017.

Table 7.14: Participants' top 10 favourite male names (UDS)		
	Name	Frequencies
1	/ʕumaɾ /	30
2	/ʕalii/	15
3	/zeed/	15
4	/ʔaadam/	12
5	/juusif/	12
6	/kaɾam/	12
7	/faaɾis/	9
8	/ʤaad/	8
9	/ʃahim/	8
10	/qajs/	**7**

Two of these names have the exact same structure CVV.CVC of the names /waahid/ and /jaahid/ that were chosen with the highest percentages by male and female participants' as their preferred male-sounding pseudonames. Three names of the ten end in /d/ sound. This finding is consistent with RDS responses as it was found that three of the top favourite names for RDS end in /d/ sound.

7.3.4 UDS Findings Summary

Overall, most of the names were assigned to the gender as predicted, particularly for female-weighted names. In regard of the MGS, the majority of the names did not receive the predicted gender scoring and most of the pseudonames received neutral ratings. Names received the expected gender scoring more in female participants' responses.

Changing all the name features triggered the strongest feminine scoring in UDS responses, as the heavily female-weighted name/ʃiimaah/ received the highest score while name-initial /j/ triggered the highest score in male-weighted name /jubi/.

For UDS, syllable-initial /ɾ/ did not trigger strong masculine scoring and syllable-initial /m/ did not trigger strong feminine scoring. Syllable final /ɾ/ and name initial /ʕ/ seem to be strong masculine gender trigger and the vowel /ii/ in syllable-final position is a strong feminine gender trigger.

Regarding the second hypothesis that names that have more male-associated or female-associated features are evaluated more positively, it was found that most of UDS female responses were consistent with the hypothesis, especially in their choice of female names. Heavily female-weighted names /tiitaa/, /liitaa/, /ɾiiman/, /biijaan/, /ʃiimaah/ were chosen by female participants as their most preferred female names. On the other hand, male participants chose heavily female- weighted /ɾiiman/, /biijaan/ and /ʃiimaah/.

Female participants chose the heavily male-weighted names /jiɾis/, /waahid/, /jaahid/ as their preferred male names with highest percentages but not the heavily weighted male names /ħaaɾim/ and /ʕimsˤim/. Male participants, on the other hand chose heavily male-weighted names /waahid/ and /jaahid/ as their preferred male name with highest percentages but not heavily male-weighted /jiɾis/, /ħaaɾim/ and /ʕimsˤim/.

The hypothesis applied more to female names; the more heavily female-weighted a name is, the more preferred it is by participants, especially female participants. The heavily female-weighted name /ʃiimaah/ was chosen with the highest percentages by male and female participants. The name was created using the female-sounding sound /ʃ/ as name initial, vowel /ii/ as syllable-final, /h/ as a name final, and /m/ as syllable-initial.

The heavily male-weighted name /waahid/ was chosen with the highest percentage by male participants, while the heavily male-weighted name /jaahid/ was chosen by female participants. These names have glides /w/ and /j/ as name initial, /h/ as a syllable-initial, vowel /aa/ as a syllable-final, and /d/ as a name final

Regarding favourite names, the name /saaɾah/ was at the top of the preferred names. It shares the same number of syllables, the syllable structure CVV as the first syllable and sound /h/ as the name final with the heavily female-weighted pseudoname name /ʃiimaah/ that was chosen with the highest percentages by male and female participants as the most preferred female-sounding pseudoname.

Male names /ʔaadam/ and /faaɾis/ that were among the top 10 most favourite names share the same structure CVV.CVC of the names /waahid/ and /jaahid/ that were chosen with the highest percentages by male and female participants as their preferred male-sounding pseudonames.

7.4 English Native speakers (ENS)

This part of the analysis includes the English native speaking participants. 17 ENS took part in the questionnaire. Their responses were analysed to test the hypotheses of the study and to investigate any cross-linguistic perception regarding names between RDS and ENS participants. Figure 7.3 shows that majority of the ENG participants fall in the age group 16-25 and the majority are female as shown in figure 7.4.

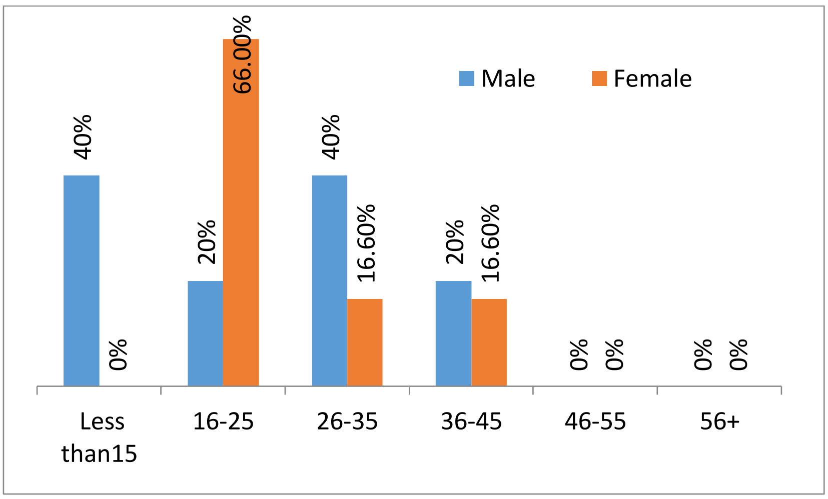

Figure 7.3: ENS participants' age and gender

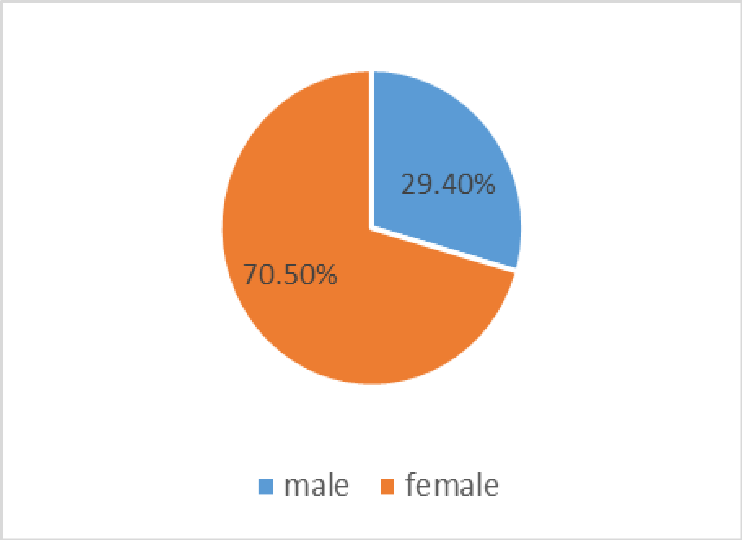

Figure 7.4: ENS participants' Gender

7.5 Analysis of English Native Speakers' Responses

This main part of the analysis is divided into three subparts. The first one analyses ENS participants' responses to section 2 of the questionnaire; questions 1-29. This section investigates gender perception and gender assignment. The second part of the analysis is dedicated to section 3 of the questionnaire that examines the naming preference. The third part analyses the fourth section of the questionnaire that investigates participants' favourite names.

7.5.1 Gender Perception

This part includes two sections; the first describes the responses to the questionnaire in general. The second section, on the other hand, analyses the responses mean gender score.

7.5.1.1 Survey Responses

The analysis focuses on the sets from Chapter 6. Each set appears in a table showing the changed feature, the name and the percentages of choices for male and female participants. The pseudonames identified as male-weighted appear in the right column, while the pseudonames identified as female-weighted appear in the left column. The expected choices are highlighted as well.

The first neutral name is /zuɾin/. Table 7.15 shows that the majority of participants' responses were consistent with the predicted classification of male-weighted names but not for female-weighted names. Out of five female-weighted names, only three names were classified as female names besides the heavily gender-weighted name. Heavily gender-weighted, /waahid/ and /tiitaa/ were chosen with highest percentages, 94.1% of participants have chosen /waahid/ as a male name, and 76.4% have chosen /tiitaa/ as female name.

Table 7.15: Neutral name /zuɾin/ (ENS)				
	male-weighted		**female-weighted**	
Syllable-final	/zaaɾin/		/ziiɾin/	
Male	10	58.8%	10	58.8%
Female	6	35.2%	4	23.5%
Neither male nor female	1	5.8%	3	17.6%
Name-initial	/juɾin/		/tuɾin /	
Male	11	64.7%	7	41.1%
Female	3	17.6%	8	47%
Neither	3	17.6%	2	11.7%
Name-final	/zuɾid/		/zuɾaa/	
Male	10	58.8%	4	23.5%
Female	2	11.7%	11	64.7%
Neither male nor female	5	29.4%	2	11.7%
Syllable-initial	/zuhin/		/zutin/	
Male	12	70.5%	8	47%
Female	4	23.5%	5	29.4%
Neither male nor female	1	5.8%	4	23.5%
All features	/waahid/		/tiitaa/	
Male	16	94.1%	4	23.5%
Female	1	5.8%	13	76.4%
Neither male nor female	0		0	

Regarding the second neutral name /ʤubi/, Table 7.16 shows that the majority of participants' responses, contrary to the previous name group, were consistent with the predicted classification of female-weighted names but not male-weighted names. Heavily male-weighted name /jiris/ was the only male-weighted name assigned to male gender and heavily female-weighted name /liita/ assigned as expected by the highest percentages of participants.

Table 7.16: Neutral name: /ʤubi/ (ENS)				
	male-weighted		female-weighted	
Name-initial	/jubi/		/lubi/	
Male	2	11.7%	5	29.4%
Female	13	76.4%	11	64.7%
Neither male nor female	2	11.7%	1	5.8%
Syllable-structure	/ʤuɾis/		/ʤiibaa/	
Male	7	41.1%	4	23.5%
Female	8	47%	12	70.5%
Neither male nor female	2	11.7%	1	5.8%
Name-final	/ʤubis/		/ʤubaa/	
Male	3	17.6%	11	64.7%
Female	10	58.8%	2	11.7%
Neither male nor female	4	23.5%	4	23.5%
Syllable-initial	/ʤuɾi/		/ʤuti/	
Male	6	35.2%	1	5.8%
Female	8	47%	14	82.3%
Neither male nor female	3	17.6%	2	11.7%
Syllable-final	/ʤibi/		/ʤiibi/	
Male	5	29.4%	6	35.2%
Female	8	47%	9	52.9%
Neither male nor female	4	23.5%	2	11.7%
All features	/jiɾis/		/liitaa/	
Male	10	58.8%	1	5.8%
Female	6	35.2%	15	88.2%
Neither male nor female	1	5.8%	1	5.8%

The third neutral name is /nuusiɾ/. Table 7.17 shows that the majority of participants' responses were consistent with the predicted classification of female-weighted names. The heavily male-weighted name /ħaarim/ and the heavily female-weighted name /riiman/ were assigned to the gender with the highest percentages.

Table 7.17: Neutral name: /nuusiɾ/ (ENS)				
	male-weighted		**female-weighted**	
Name-initial	/ħuusiɾ/		/ɾuusiɾ/	
Male	7	41.1%	4	23.5%
Female	8	47%	10	58.8%
Neither male nor female	2	11.7%	3	17.6%
Name-final	/nuusim/		/nuusin/	
Male	7	41.1%	6	35.2%
Female	7	41.1%	8	47%
Neither male nor female	3	17.6%	3	17.6%
Syllable-final	/naasiɾ/		/niisiɾ/	
Male	6	35.2%	4	23.5%
Female	10	58.8%	8	47%
Neither male nor female	1	5.8%	5	29.4%
vowels	/naasiɾ/		/niisaɾ/	
Male	8	47%	4	23.5%
Female	7	41.1%	11	64.7%
Neither male nor female	2	11.7%	2	11.7%
Syllable-initial	/nuɾiɾ/		/nuumiɾ/	
Male	3	17.6%	10	58.8%
Female	11	64.7%	2	11.7%
Neither male nor female	3	17.6%	5	29.4%
All features	/ħaaɾim/		/ɾiiman/	
Male	13	76.4%	5	29.4%
Female	3	17.6%	10	58.8%
Neither male nor female	1	5.8%	2	11.7%

The fourth neutral name is /fuuki/. Results show that most of the responses were consistent with the expected classification of female-weighed names. Heavily male-weighted name /jaahid/ was assigned to the male gender by the highest percentage among male-weighted names. On the other hand, the female-weighted name /fiikaa/ that was created with changing the vowels in neutral name was assigned to female gender by highest percentage among female weighted names.

Table 7.18 : Neutral name: /fuuki/ (ENS)

	male-weighted		**female-weighted**	
Syllable-final	**/faaki/**		**/fiiki/**	
Male	10	58.8%	3	17.6%
Female	6	35.2%	14	82.3%
Neither male nor female	1	5.8%	0	
Vowels	**/faaki/**		**/fiikaa/**	
Male	5	29.4%	1	5.8%
Female	11	64.7%	15	88.2%
Neither male nor female	1	5.8%	1	5.8%
Name-final/syllable structure)	**/fuukid/**		**/fuukin/**	
Male	6	35.2%	3	17.6%
Female	6	35.2%	10	58.8%
Neither male nor female	5	29.4%	4	23.5%
Syllable-initial	**/fuuhi/**		**/fuuja/**	
Male	13	76.4%	3	17.6%
Female	2	11.7%	9	52.9%
Neither male nor female	2	11.7%	5	29.4%
Name-initial	**/juuki/**		**/buuki/**	
Male	4	23.5%	7	41.1%
Female	13	76.4%	9	52.9%
Neither male nor female	0		1	5.8%
All features	**/jaahid/**		**/biijaan/**	
Male	11	64.7%	8	47%
Female	5	29.4%	8	47%
Neither male nor female	1	5.8%	1	5.8%

For the last neutral name /kunsaaf/, Table 7.19 shows that the majority of participants' responses were consistent with the expected classification of names into male or female names except for the female-weighted name /kunmaaf/. Although it was created using a female-weighted feature, 70.5% of the participants assigned this name as a male name. Male-weighted name /kinsif/ that was created by changing the vowels of the neutral name form /u/ and /aa/ into /i/ was assigned as a male-weighted name with highest percentage among male-weighted name 88.2%. The heavily female-weighted name /ʃiimaah/ was assigned as a female name with a percentage of 94.1%.

Table 7.19: Neutral name: /kunsaaf/ (ENS)				
	male-weighted		**female-weighted**	
Name-initial	**/ʕunsaaf/**		**/ʃunsaaf/**	
Male	11	64.7%	7	41.1%
Female	3	17.6%	8	47%
Neither male nor female	3	17.6%	2	11.7%
Vowels	**/kinsif/**		**/kiisaaf/**	
Male	15	88.2%	7	41.1%
Female	1	5.8%	7	41.1%
Neither male nor female	1	5.8%	3	17.6%
Syllable-final	**/kumsaaf/**		**/kiisaaf/**	
Male	10	58.8%	1	5.8%
Female	4	23.5%	14	82.3%
Neither male nor female	3	17.6%	2	11.7%
Syllable-initial	**/kunsˤaaf/**		**/kunmaf/**	
Male	8	47%	12	70.5%
Female	5	29.4%	4	23.5%
Neither male nor female	4	23.5%	1	5.8%
Name-final	**/kunsaam/**		**/kunsaah/**	
Male	7	41.1%	6	35.2%
Female	6	35.2%	9	52.9%
Neither male nor female	4	23.5%	2	11.7%
All features	**/ʕimsˤim/**		**/ʃiimaah/**	
Male	13	76.4%	0	
Female	2	11.7%	16	94.1%
Neither male nor female	2	11.7%	1	5.8%

Overall, results show that most female-weighted names were assigned to their gender as predicted, although often not very strongly. Table 7.20 shows the names that are assigned to their gender as predicted with highest percentages in each neutral name group. The majority of the names in Table 7.20 are heavily gender-weighted names, in which all features of neutral names were changed.

Besides changing all the features of neutral names, syllable-initial /h/ in /fuuhi/ and short vowel /i/ in /kinsif/ are strong masculine features, and long vowels /ii/ in /fiikaa/ and /niisaɾ/ is a strong feminine feature.

Table 7.20:Male and female-weighted names with highest percentages (ENS)

Male-weighted names	Percentage	Feature changed	Female-weighted names	Percentage	Feature changed
/jiɾis/	58.8%	All features	/liitaa/	88.2%	All features
/waahid/	94.1%	All features	/tiitaa/	76.4%	All features
/ħaaɾim/	76.4%	All features	/niisaɾ/	64.7%	Vowels
/fuuhi/	76.4%	Syllable-initial	/fiikaa/	88.2%	Vowels
/kinsif/	88.2%	Vowels	/ʃiimaah/	94.1%	All features

7.5.1.2 Mean Gender Score

As applied in Chapter 6, to test the hypothesis that participants inferred the gender of pseudonames relying on their phonology, participants' responses were converted into numerical values for statistical analysis.

Mean gender assignments for each of the 58 pseudonames in responses of all ENS participants are shown in Table 7.21. Names with a feminine rating are highlighted in orange and names with the masculine rating are highlighted in blue. When the rating contradicts the prediction, the rating is highlighted in yellow.

Table 7.21 : Mean gender assignments for pseudonames for All ENS participants

	Feature manipulated	Name	Expected gender	MGS
1: A	Name-initial	/jubi/	Male	0.823529
1: B	Name-initial	/lubi/	Female	0.676471
2: A	Name-initial	/tuɾin/	Female	0.235294
2: B	Name-initial	/juɾin/	Male	0.264706
3: A	Name-initial	/ħuusiɾ/	Male	0.529412
3: B	Name-initial	/ɾuusiɾ/	Female	0.676471
4: A	Syllable-initial	/kunsˤaaf/	Male	0.411765
4: B	Syllable-initial	/kunmaaf/	Female	0.264706
5: A	Name-initial	/buuki/	Female	0.558824
5: B	Name-initial	/juuki/	Male	0.764706
6: A	Name-initial	/ʕunsaaf/	Male	0.264706
6: B	Name-initial	/ʃunsaaf/	Female	0.529412
7: A	All features	/ʕimsˤim/	Male	0.176471
7: B	All features	/ʃiimaah/	Female	0.970588
8: A	All features	/biijaan/	Female	0.5
8: B	All features	/jaahid/	Male	0.323529
9: A	All features	/ħaaɾim/	Male	0.205882
9: B	All features	/ɾiiman/	Female	0.647059
10: A	Name-final	/nuusim/	Male	0.5
10: B	Name-final	/nuusin/	Female	0.558824
11: A	Syllable-final	/kumsaaf/	Male	0.323529
11: B	Syllable-final	/kiisaaf/	Female	0.882353
12: A	Syllable-final	/fiiki/	Female	0.823529

12: B	Syllable-final	/faaki/	Male	0.382353
13: A	Syllable-final	/ʤibi/	Male	0.588235
13: B	Syllable-final	/ʤiibi/	Female	0.588235
14: A	Syllable-final	/zaaɾin/	Male	0.382353
14: B	Syllable-final	/ziiɾin/	Female	0.323529
15: A	Syllable-final	/niisiɾ/	Female	0.617647
15: B	Syllable-final	/naasiɾ/	Male	0.382353
16: A	Name-final	/zuɾaa/	Female	0.705882
16: B	Name-final	/zuɾid/	Male	0.264706
17: A	Name-final	kunsaah/	Female	0.588235
17: B	Name-final	/kunsaam/	Male	0.470588
18: A	Syllable-initial	/zutin/	Female	0.411765
18: B	Syllable-initial	/zuhin/	Male	0.264706
19: A	Name-final	/ʤubaa/	Female	0.705882
19: B	Name-final	/ʤubis/	Male	0.235294
20: A	All features	/waahid/	Male	0.058824
20: B	All features	/tiitaa/	Female	0.764706
21: A	Vowels	/niisaɾ/	Female	0.705882
21: B	Vowels	/naasiɾ/	Male	0.470588
22: A	Syllable-initial	/ʤuti/	Female	0.882353
22: B	Syllable-initial	/ʤuɾi/	Male	0.558824
23: A	Vowels	/faaki/	Male	0.676471
23: B	Vowels	/fiikaa/	Female	0.911765
24: A	Syllable-initial	/fuuhi/	Male	0.176471
24: B	Syllable-initial	/fuuja/	Female	0.676471
25: A	Syllable-structure	/ʤuɾis/	Male	0.529412
25: B	Syllable-structure	/ʤiibaa/	Female	0.735294
26: A	All features	/liitaa/	female	0.911765
26: B	All features	/jiɾis/	Male	0.617647

27: A	Syllable-initial	/nuuɾiɾ/	Male	0.735294
27: B	Syllable-initial	/nuumiɾ/	Female	0.264706
28: A	Name-final/Syllable-structure	/fuukid/	Male	0.5
28: B	Name-final/syllable-structure	/fuukin/	Female	0.294118
29: A	Vowels	/kinsif/	Male	0.088235
29: B	Vowels	/kiisaaf/	Female	0.5

Most of the names' mean gender scores show that names were given a neutral value.

Male-weighted /fuuhi/ was created by changing the syllable-initial of the neutral name from /k/ into /h/ assigned as a male-weighted name with a MGS of 0.176471. For ENS, syllable- initial /h/ is the strongest trigger of the masculine score. On the other hand, heavily female-weighted name /ʃiimaah/ scored the highest MGS of 0.970588. It is observed that long vowel /aa/ name-finally triggered strong feminine scoring among ENS as in /liitaa/, /ʤubaa/, /ʤiibaa/, /fiikaa/ and /tiitaa/.

It is also observed that most of the names that end in open syllables were assigned as female names or neutral scorings, with only one name assigned as a male-weighted name. The male-weighted names /jubi/ and /juuki/ had female name scorings. Male-weighted names /faaki/, /ʤibi/, /ʤiibi/ and /ʤuɾi/ had neutral scorings. The only male-weighted name that ends in open syllable that was assigned as a male names is the name /fuuhi/. This finding can be linked to the fact that English female names tend to end in open syllables.

It seems that ENS applied their knowledge of English names phonology to the pseudonames, or that the final open syllable is a universally female name feature.

Syllable-initial /ɾ/, that is a male-weighted feature, did not trigger strong masculine scoring. Male-weighted name /nuuɾiɾ/ had a feminine scoring 0.735294 while the male-weighted name /ʤuɾi/ that has syllable-initial /ɾ/ had a neutral rating.

As explained in section 7.3.1.2, in this chapter, responses are classified according to gender only. Due to the small number of ENS participants, it would not have resulted in sufficient number of participants in each group. The two main groups; ENS male and female participants as shown in Table 7.22.

Table 7.22: Mean gender assignments for pseudonames for ENSs male and female participants

	Feature manipulated	Name	Expected gender	ENS Male	ENS female
1: A	Name-initial	/jubi/	Male	0.6	0.916667
1: B	Name-initial	/lubi/	Female	0.6	0.708333
2: A	Name-initial	/tuɾin/	Female	0.3	0.208333
2: B	Name-initial	/juɾin/	Male	0.3	0.25
3: A	Name-initial	/ħuusiɾ/	Male	0.7	0.458333
3: B	Name-initial	/ɾuusiɾ/	Female	0.4	0.791667
4: A	Syllable-initial	/kunsˤaaf/	Male	0.1	0.541667
4: B	Syllable-initial	/kunmaaf/	Female	0.1	0.333333
5: A	Name-initial	/buuki/	Female	0.4	0.625
5: B	Name-initial	/juuki/	Male	0.6	0.833333
6: A	Name-initial	/ʕunsaaf/	Male	0.2	0.291667
6: B	Name-initial	/ʃunsaaf/	Female	0.5	0.541667
7: A	All features	/ʕimsˤim/	Male	0.3	0.125
7: B	All features	/ʃiimaah/	Female	0.9	1
8: A	All features	/biijaan/	Female	0.7	0.416667
8: B	All features	/jaahid/	Male	0.4	0.291667
9: A	All features	/ħaaɾim/	Male	0	0.291667
9: B	All features	/ɾiiman/	Female	0.9	0.541667
10: A	Name-final	/nuusim/	Male	0.6	0.458333
10: B	Name-final	/nuusin/	Female	0.4	0.625
11: A	Syllable-final	/kumsaaf/	Male	0.3	0.333333
11: B	Syllable-final	/kiisaaf/	Female	0.9	0.875
12: A	Syllable-final	/fiiki/	Female	0.6	0.916667
12: B	Syllable-final	/faaki/	Male	0.2	0.458333

13: A	Syllable-final	/ʤibi/	Male	0.8	0.5
13: B	Syllable-final	/ʤiibi/	Female	0.6	0.583333
14: A	Syllable-final	/zaaɾin/	Male	0.2	0.458333
14: B	Syllable-final	/ziiɾin/	Female	0.3	0.333333
15: A	Syllable-final	/niisiɾ/	Female	0.7	0.583333
15: B	Syllable- final	/naasiɾ/	Male	0.5	0.333333
16: A	Name- final	/zuɾaa/	Female	0.9	0.625
16: B	Name- final	/zuɾid/	Male	0.3	0.25
17: A	Name- final	/kunsaah/	Female	0.2	0.75
17: B	Name- final	/kunsaam/	Male	0.5	0.458333
18: A	Syllable-initial	/zutin/	Female	0.5	0.375
18: B	Syllable-initial	/zuhin/	Male	0	0.375
19: A	Name-final	/ʤubaa/	Female	0.6	0.75
19: B	Name-final	/ʤubis/	Male	0	0.333333
20: A	All features	/waahid/	Male	0.2	0
20: B	All features	/tiitaa/	Female	0.2	1
21: A	Vowels	/niisaɾ/	Female	0.5	0.791667
21: B	Vowels	/naasiɾ/	Male	0.4	0.5
22: A	Syllable-initial	/ʤuti/	Female	0.7	0.958333
22: B	Syllable-initial	/ʤuɾi/	Male	0.2	0.708333
23: A	Vowels	/faaki/	Male	0.7	0.666667
23: B	Vowels	/fiikaa/	Female	1	0.875
24: A	Syllable-initial	/fuuhi/	Male	0.2	0.166667
24: B	Syllable-initial	/fuuja/	Female	0.6	0.708333
25: A	Syllable-structure	/ʤuɾis/	Male	0.6	0.5
25: B	Syllable-structure	/ʤiibaa/	Female	0.6	0.791667
26: A	All features	/liitaa/	Female	0.9	0.916667
26: B	All features	/jiɾis/	Male	0.8	0.541667

27: A	Syllable-initial	/nuuɾiɾ/	Male	0.4	0.875
27: B	Syllable-initial	/nuumiɾ/	Female	0.5	0.166667
28: A	Name-final/ Syllable-structure	/fuukid/	Male	0.6	0.458333
28: B	Name-final/ syllable-structure	/fuukin/	Female	0.5	0.208333
29: A	Vowels	/kinsif/	Male	0.1	0.083333
29: B	Vowels	/kiisaaf/	Female	0.6	0.458333

It can be observed from Table 7.22 that the majority received neutral ratings. Table 7.23 shows that no differences are observed regarding the impact of gender.

Table 7.23: MGS assigned to gender (ENS)			
	Names with MGS as expected	**Names with MGS contradicting expectation**	**Names with Neutral ratings**
Male ENS	41.3%	15.5%	43.1%
Female ENS	41.3%	15.5%	43.1%

For ENS male participants, the heavily male-weighted name /ħaaɾim/ and the male-weighted /ʤubis/ and /zuhin/ had the lowest score of 0. /ʤubis/ was created by changing the second syllable into closed syllable by adding name-final /s/. /zuhin/ was created by changing the syllable-initial from /ɾ/ into /h/. The female-weighted /fiikaa/ had the highest MGS of 1. This name was created by changing the vowels of the neutral name form /u/ into /ii/ and /i/ into /aa/ as name-final. Besides changing all the features of neutral names, name-final /s/ in /ʤubis/ and syllable-initial /h/ in /zuhin/ are strong masculine features, and long vowels /ii/ in /fiikaa/ is a strong feminine feature.

Heavily female-weighted name /tiitaa/ received a male name score. Reviewing similar names, it is observed that long vowel /aa/ name-finally triggered strong feminine scoring among ENS as in /liitaa/, /ʤubaa/, /ʤiibaa/, /fiikaa/. A possible explanation for the name /tiitaa/ is that this name has other features that triggered masculine score other than name-final /aa/. This name was created by changing all the features of the neutral name; one of these features is the name-initial /t/ that possibly triggered the male score for ENS male participants. Another name that has the name-initial /t/ is the female-weighted name /tuɾin/ that received a male name score as well.

It can also be observed that the majority of names that end in open syllables received either neutral scores or feminine scores, which is consistent with English name phonology. /faaki/ and /fuuhi/ were the only names with open ending syllables that received masculine score. The name /faaki/ was presented twice in the pseudoname list, one due to changing the vowels and the other for changing the first syllable-final of the neutral name /fuuki/. Only in one of the pairings did this name receive a masculine score.

For female ENS participants, heavily female-names /ʃiimaah/ and /tiitaa/ received the highest score of 1. Surprisingly, ENS male participants assigned the heavily female-weighted name /tiitta/ as a male name; ENS female participants assigned it to the predicted gender with a MGS of 1. Heavily male-weighted name/waahid/ received the lowest MGS of 0.

As explained earlier with the overall results of ENS participants, most of the names that end in open syllables received feminine or neutral scorings, with only one name assigned as male-weighted name. Male-weighted names /ʤuɾi/, /juuki/ and /jubi/ had feminine scorings. Similar to the results of the overall analysis of ENS, the only male-weighted name that ends in an open syllable that received a masculine score is the name /fuuhi/. This finding can be linked to the fact that English female names tend to end in open syllables. It seems that ENS applied their knowledge of English names phonology to the pseudonames, or that the final open syllable is universally female name feature.

To review what features triggered feminine or masculine scoring for ENS male and female participants, Table 7.24 shows the names that received the predicted gender score by both male and female participants.

Table 7.24: Names show agreement on the gender among ENS male and female participants					
Female names	**Feature**	**Change**	**Male name**	**Feature**	**Change**
/ʃiimaah/	All features		/kinsif/	Vowels	/i/
/liittaa/	All features		/waahid/	All features	
/kiisaaf/	Syllable-final	/ii/	/ħaaɾim/	All features	
/fiikaa/	Vowel	/aa/ as name-final	/ʕimsˤim/	All features	
/ʤuti/	Syllable-initial	/t/	/ʕunsaaf/	Name-initial	/ʕ/
			/fuuhi/	Syllable-initial	/h/
			/kumsaaf/	Syllable-final	/m/
			/zuɾid/	Name-final	/d/
			/juɾin/	Name-initial	/j/

In regard to female names, syllable-final /ii/ triggered a feminine score in /kiisaaf/, /niisaɾ/, /fiiki/ and /fiikaa/ but not in female-weighted name /ziiɾin/, which received a masculine scoring. Syllable-final /ii/ can still be considered a strong feminine feature trigger as female name /ziiɾin/ has the short vowel /i/ that is a male-weighted feature and it ends in a closed syllable.

Name-final /aa/ triggered a strong feminine score in names created by changing the name-final of the neutral names into /aa/ as in /zuɾaa/ and /ʤubaa/. Syllable-initial /t/ triggered strong feminine scoring for ENS male and female participants in female weighted name /ʤuti/. However, the female-weighted name /zutin/ received a neutral scoring. It is more likely that the open final syllable triggered the feminine scoring not the syllable initial /t/.

The male-weighted name /kinsif/ was the only name that was created by only changing the vowels of the neutral name into short vowel /i/. Other names that have short vowel /i/ were created by using other features that triggered or contradicted the predicted scoring. Short vowel /i/ triggered strong masculine scoring. Name-initial /ʕ/ is only used in /ʕunsaaf/ and /ʕimsˤim/ and in both it triggered a strong masculine score.

Syllable-initial /h/ triggered strong masculine scoring in /fuuhi/. Comparing the name /fuuhi/ to similar names that were created using syllable initial /h/, it was found that male-weighted name /zuhid/ triggered masculine scoring by ENS male participants. Syllable-initial /h/ can be considered a strong masculine feature.

Name-final /d/ triggered strong masculine scoring in /zuɾid/ but not in the other name that was created by using name-final /d/ that is /fuukid/. One of the differences between these names is the use of long vowel /uu/ in /fuukid/ and relying on Table 4.9 this is a female-name feature. Relying on this, name-final /d/ is considered a strong masculine feature.

Name-initial /j/ triggered a strong masculine scoring in /juɾin/ but not in /juuki/ and /jubi/ that were created using the name-initial /j/. Although these names received feminine scoring, it is more likely that the open final syllable was the reason behind this choice not the name-initial /j/. Finally, syllable-final /m/ triggered a masculine scoring in /kumsaaf/ but no other name was created with /m/ as syllable-final.

7.5.1.3 Naming Preference

Analysis of ENS responses to the second question of the questionnaire follows the same procedures of analysing RDS and UDS responses. This question was created to test the hypothesis that names created with changing all features would be preferred as they are identified as more male or female names by the participants rather than the names created by changing one feature only. Responses were analysed based on the gender of the participants. Tables 7.25 and 7.26 show the ENS participants' choices. Each group shows the names that were created from the same neutral name and the heavily gender-weighted name in each group is highlighted.

Table 7.25: ENS participants' preferences (female names)		
	Male participants	**Female participants**
/tiitaa/	20%	8.3%
/zutin/	20%	8.3%
/zuɾaa/	20%	66.6%
/tuɾin/	0	0
/ziiɾin/	40%	16.6%
/ ʤubaa/	0	8.3%
/ʤuti/	20%	25%
/lubi/	0	25%
/liitaa/	80%	16.6%
/ʤiibi/	0	25%
/ɾiiman/	0	33.3%
/ɾuusiɾ/	20%	0
/niisiɾ/	40%	8.3%
/nuusin/	0	8.3%
/nuumiɾ/	0	0
/niisaɾ/	40%	50%
/biijaan/	0	0
/fiikaa/	20%	33.3%
/fuukin/	0	8.3%
/buuki/	60%	0
/fuuja/	0	25%
/fiiki/	20%	33.3%
/ʃiimaah/	20%	58.3%
/kunmaf/	0	0
/ʃunsaaf/	40%	0
/kiisaaf/	20%	16.6%
/kunsaah/	20%	25%

Table 7.26: ENS participants' preferences (male names)		
	Male participants	**Female participants**
/jiɾis/	20%	25%
/jubi/	40%	33.3%
/ʤibi/	0	0
/ʤuɾis/	0	25%
/ʤuɾi/	0	8.3%
/ʤubis/	40%	8.3%
/wuɾin/	0	8.3%
/waahid/	20%	8.3%
/zuɾid/	20%	0
/zaaɾin/	0	33.1%
/zuhin/	60%	50%
/naasiɾ/	0	25%
/ħuusiɾ/	40%	0
/nuɾiɾ/	20%	0
/ħaaɾim/	0	50%
/nuusim/	20%	25%
/jaahid/		25%
/faaki/	20%	8.3%
/juuki/	20%	50%
/fuukid/	40%	16.6%
/fuuhi/	20%	
/ʕimsˤim/	0	8.3%
/ʕunsaaf/	0	16.6%
/kunsˤaaf/	20%	16.6%
/kunsaam/	0	25%
/kinsif/	40%	25%
/kumsaaf/	40%	8.3%

In all name groups, ENS participants chose only two heavily female-weighted names as preferred names. Male participants chose only one heavily female-weighted name /liitaa/ while the female participants chose the heavily female-weighted name /ʃiimaah/ with the highest percentages. On the other hand, ENS male participants selected none of the heavily male-weighted names as a preferred name and ENS female participants selected only one heavily male-weighted name /ħaaɾim/ as a preferred name.

This finding contradicts our second hypothesis. One possible justification is that considering a name more pleasant if it contains more male or female name feature is restricted to JA participants or rather that such preference is language-specific. This hypothesis was supported by RDS and UDS. Although this could be a significant finding about the universality of this feature, this notion cannot be generalised due to the small number of ENS participants. Future research can test this feature with larger number of participants.

7.5.1.4 Favourite Names

For the last question in the questionnaire, participants were asked to provide their top 5 favourite male and female names. The top five favourite male and female names are shown in Tables 7.27 and 7.28.

Table 7.27: Participants' top 5 favourite female names (ENS)

	Name	Frequencies
1	/rəʊzi/	4
2	/əlɪviə/	3
3	/seərə/	3
4	/ailə/	3
5	/luːsi/	2

Table 7.28:Participants' top 5 favourite male names (ENS)

	Name	Frequencies
1	/mæks/	5
2	/θiədɔ/	4
3	/sæm/	4
4	/ʤeɪk/	3
5	/ʤeɪmz/	3

.

The top five most selected female names and male names comply with the features of English names. Female names end with an open syllable (ending in a vowel) and top five most preferred male names end in a consonant, mostly an obstruent. This was explained earlier when explained that ENS participants applied their knowledge of English names phonology to the pseudonames. ENS participants have mostly chosen open syllable pseudonames as female names and closed syllable-ending pseudonames as male names.

7.5.1.5 ENS Findings Summary

Overall, results show that most of the female-weighted names were assigned to their gender as predicted, although often not very strongly.

Regarding the MGS, the majority of pseudonames did not receive the expected gender scoring, and most pseudonames received neutral ratings. Besides changing all the features of neutral names, syllable-final /ii/ and name-final /aa/ triggered strong feminine scoring while short vowel /i/, name-initial /ʕ/, syllable-initial /h/, name-final /d/, name-initial /j/ and syllable-final /m/ triggered a masculine scoring. Syllable-initial /ɾ/, which is a male-weighted feature, did not trigger strong masculine scoring.

For male ENS, heavily male-weighted name /ħaaɾim/, male-weighted names /zuhin/ and /ʤubis/ had the lowest MGS of 0, while female-weighted name /fiikaa/ had the highest MGS of 1.

For female ENS participants, heavily female-names /ʃiimaah/ and /tiitaa/ received the highest score of 1. Heavily male-weighted name /waahid/ received the lowest MGS of 0.

Most of the names that end in open syllables were assigned as female names or neutral scorings. This finding can be linked to the fact that English female names tend to end in open syllables. It seems that ENS applied their knowledge of English names phonology to the pseudonames or the final open syllable is universally female name feature.

Regarding the second hypothesis that names that have more male-associated or female-associated features are evaluated more positively, it was found that ENS responses contradict this hypothesis. Male participants chose only one heavily female-weighted name and none of the heavily-male weighted names as their preferred names while ENS female participants selected only one heavily female-weighted name and one heavily male-weighted names as their preferred names.

Among the heavily gender-weighted names, the heavily female-weighted name /ʃiimaah/ was chosen with the highest percentages by female participants. The name was created using the female-sounding sound /ʃ/ as a name initial, vowel /ii/ as a syllable-final, /h/ as a name final, and /m/ as a syllable-initial. While male participants chose the name /liitaa/ that has name-initial /l/, long vowel /ii/ as syllable-final, /t/ as syllable-initial and long vowel /aa/ as name-final.

The heavily male-weighted name /ħaaɾim/was chosen with the highest percentage by female participants, while male participants chose none of the heavily male-weighted name. /ħaaɾim/ has /ħ/ as a name-initial, long vowel /aa/ as syllable-final, /ɾ/ as syllable initial, short vowel /i/ and /m/ as name-final. However, as explained earlier, syllable-initial /ɾ/ did not trigger strong masculine scoring, but other features in this name have triggered the masculine features.

Regarding favourite names, the top five most selected female names and male names comply with the features of English names that were discussed in Chapter 2. Female names end with an open syllable (ended in a vowel) and top five most preferred male names end in a consonant, mostly an obstruent. ENS applied their knowledge of the phonology of English names to the pseudonames, or this may imply that the final open syllable is universally female name feature. ENS have mostly chosen open syllable pseudonames as female names and closed syllable-ending pseudonames as male names.

7.6 Cross-Linguistic Findings: Conclusions

This chapter investigated the perception of the phonology of names by UDS and ENS participants. It also answered one of the research questions whether there are similar associations between Arabic and English speakers regarding sound patterns in names or not. It also tested the study hypotheses among UDS and ENS and investigates any association with RDS responses.

Overall most of the names were assigned to the gender as predicted especially, female-weighted names by UDS and ENS, but percentages were not as high as RDS participants were. The first hypothesis is supported among RDS, UDS and ENS, but the percentages vary with RDS responses being more consistent with the predicted assignment. In regard of the MGS, responses of UDS and ENS show that, the majority of the names did not receive the predicted gender scoring and most of pseudonames received neutral ratings. In ENS responses, most of the names mean gender scores show that names were given a neutral value or the gender assignments contradict expectation.

Gender impact on the responses of UDS was found to be contrary to the findings of RDS responses. Unlike RDS, names received the expected gender scoring more in female participants' responses than male participants do. Gender did not have an impact on ENS responses.

Heavily-female weighted name /ʃiimaah/ received the highest score as a feminine name among RDS, UDS and ENS participants, which means that changing all the features of the name triggered the strongest feminine scoring in the three groups (RDS, UDS and ENS).

Table 7.29 shows the most remarkable masculine, feminine and neutral scoring triggered among RDS, UDS and ENS.

Table 7.29: Gender-trigger features

	Masculine features	Feminine features	Contrary to prediction
RDS	• Short vowel /i/. • Closed final syllable. • Syllable-final /m/.	• Open syllable name-finally. • Name-final /aa/. • Name-initial /l/. • Syllable-final /ii/.	• Male-weighted syllable-initial /ɾ/ triggered feminine score
UDS	• Name-initial /j/ • Name initial /ʕ/ • Syllable-final /aa/ • Closed final syllable	• Syllable-final /ii/. • Open-syllable name-finally.	• Male-weighted syllable-initial /ɾ/ triggered feminine score.
ENS	• Short vowel /i/ • Syllable initial /h/. • Name-initial /ʕ/. • Name-final /d/. • Name-initial /j/. • Syllable-final /m/. • Closed final syllable.	• Syllable-final /ii/. • Name-final /aa/ • Open-syllable name-finally.	• Female-weighted name-initial /t/ triggered a masculine score. • Male-weighted syllable-initial /ɾ/ triggered feminine score.

Syllable structure name-finally is a cross-linguistic feature that all the three groups share in terms of gender scoring. RDS, UDS and ENS responses revealed that names had a strong tendency to receive a feminine score when they ended in open syllables and a masculine score when they ended in closed syllables. This feature is agreed upon in the previous literature on English names and proved correct in this study for JA names. Another cross-linguistic feature regarding names is the syllable-final /ii/ that triggered feminine feature scoring for the three groups.

Among RDS and ENS, name-final long vowel /aa/ is cross-linguistic female name feature while short vowel /i/ and syllable-final /m/ are male name features. Male-weighted syllable-initial /ɾ/ is considered a female name feature by RDS, UDS and ENS.

In regards to the second hypothesis that names that have more male-associated or female-associated features are evaluated more positively, it was found that RDS and UDS responses are consistent with the hypothesis. Heavily gender-weighted names were chosen as preferred names more than gender-weighted names created using only one gender-weighted feature. On the other hand, ENS responses contradict this hypothesis. Only one heavily female-weighted and none of the heavily male-weighted name were chosen as preferred names by ENS male participants, while the female participants chose one of the heavily female-weighted names and one heavily male-weighted names.

RDS and UDS responses revealed that their favourite names are similar to the heavily weighted names that they chose with the highest percentages. Similarities include syllable structure and name-final of female-weighted names and syllable structure for male-weighted names. For ENS, The top five most selected female names and male names comply with the features of English names. Female names end with an open syllable (ended in a vowel), and the top five most preferred male names end in a consonant, mostly an obstruent.

Chapter 8
Conclusion

8.1 Introduction

This study's primary aim was to investigate the phonological patterns in male and female names in JA, study the impact of sound symbolism on the phonological differences between male and female names, and investigate the phonaesthetic patterns of first names in Jordan. Phonological features included the beginning and ending sounds, type of syllables, length of names and positive phonaesthetic features, i.e aesthetically pleasant-sounding. Sound symbolism analysis included the study of the number of *bouba* and *kiki* sounds, and the sound symbolic structure of Arabic sounds in Jordanian names. A quantitative analysis was used to test the findings and to evaluate cross-linguistic perception among Rural Dialect and Urban Dialect speakers of JA and English native speakers using pseudonames. It also tested the hypotheses that the gender of names can be predicted based on their phonology, and names that have more male-associated or female-associated features are evaluated more positively.

The present chapter provides an overview of the study's key findings. The summary establishes a direct link between the study's questions and the answers provided in the analysis. The chapter ends with suggestions for future studies.

8.2 General Summary

Given the fact that no previous research has thoroughly investigated JA personal name phonology, the first issue that this study tackled was analysing the phonological patterns of male and female names. Besides accomplishing this aim, it also examined the attested impact of sound symbolism and phonaesthetics of names in the Arab world in general and in Jordan in particular. It enriched the field of the phonology of names by studying the phonological adaptation of foreign names into JA.

The first three questions of the current study were accomplished in Chapter 4. The questions were:

1- Are phonological patterns in male names different from those in female names?
2- What are the phonaesthetic patterns in Jordanian names?
3- Is there any impact of sound symbolism on the phonological differences between Jordanian male and female names?

To answer these questions, the top most common 100 male and female names in Jordan in 2017 were collected and transcribed. The analysis follows the features set in Chapter 2 building on previous research (Slater& Feinman, 1985; Cutler, McQueen and Robinson, 1990; Klink, 2000; Zawaideh, 2006; Fredrickson, 2007; Mueller and Stumme, 2016).

Phonological analysis of names included name beginning and ending sounds, type of syllables and length of names, and the result revealed that like English names, Jordanian first female names have more sonorants and vowels than male names and tend to end in open syllables. Unlike English names, female names are shorter than male names and contain more vowels than consonants.

Phonaesthetic features, i.e aesthetically pleasant in JA names that were used in the analysis were:

1- Names have the following sounds: /l/, /m/, /n/, /j/.
2- It ends with an open syllable, i.e. ends with a vowel.
3- The number of vowels is equal to, or surpasses, the total number of the consonants.
4- The length of the word is relatively short.
5- Does not contain /ʕ/, /ðˤ/, /x/, /ɣ/ or /h/ name-initially.
6- The place of articulation changes throughout the articulation of the word.
7- The manner of articulation changes throughout the articulation of the word

Phonaesthetically speaking, it was found both male and female names tend to have positive phonaesthetic features and avoid negative features. However, female names tend to have more positive phonaesthetic features, as they tend to be shorter, tend to have more vowels and tend to end in vowels. Female names also have fewer of the dis-preferred sounds compared to male names.

Sound symbolism impact was analysed in terms of:

1- The number of *bouba* consonants and vowels. (The voiced consonants /b/,/l/,/m/ and vowels /n/,/u,/uu/)
2- The number of *kiki* consonants and vowels. (The voiceless stop consonants /k/, /t/, /q/, /g/ and vowels /i/, /ii/, /a/, /aa/).
3- Strong/weak sound contrast and front/back vowel contrast.

Findings revealed that sound symbolism is a possible factor in the phonological differences between male and female names with female names showing more front vowels and weak sounds and male names showing more back vowels and strong sounds. This supports the previous literature on the universality of sound symbolism. However, no significant impact of bouba-kiki effect was observed.

After analysing the phonological pattern of names, Chapter 5 investigated the adaptation of foreign names into JA. A list of foreign names was collected anecdotally by asking JA speakers about some of the foreign names they have heard recently. Pronunciations of these names by a sample of Jordanian Arabic and English native speakers were recorded. The data analysis framework adopted from previous research on loanwords by Salem (2015) and Abu Guba (2016). Analysis of names under study showed that names undergo two main process: segmental and suprasegmental adaptation. Findings showed that the adaptation of foreign names into JA follows the same process of loanwords adaptation. There is no evidence that adaptations of foreign names are influenced by sound symbolic or phonaesthetic choices.

The perception of the phonology of names by JA speakers was analysed in Chapter 6. Relying on the analysis of actual JA names, a list of pseudonames was created and an online questionnaire was used to investigate the perception and to test two main hypotheses: a) gender categorization of names can be predicted relying on their phonology and b) names that have more male-associated or female-associated features are evaluated more positively.

A total of 177 RDS took part in the questionnaire, and their responses were analysed statistically. Overall, results supported the two hypotheses, RDS participants were able to assign gender to the names relying on the names phonology and names that are heavily gender-weighted were preferred by RDS. Age and gender were found to have an impact on gender assignment; older male group assigned the names to the predicted gender more than other groups. This was justified by the fact that the father is the one responsible for giving his children good names with his wife's approval in Jordan and other Muslim countries. Older male participants are most probably fathers, and their choices reflect the preference of naming in Jordan.

Furthermore, to study the cross-linguistic and cross-dialectal perception of Jordanian first names and answer one of the research question whether there are similar associations between Arabic and English speakers regarding sound patterns in names or not, Chapter 7 investigated the perception of names among responses of 114 UDS and 17 ENS to the questionnaire.

The gender of most of the names was assigned as anticipated by UDS and ENS, especially female-weighted names, but the percentages were not as high as RDS participants. RDS, URD, and ENS all support the first hypothesis, although the percentages differ, with RDS responses being more consistent with the expected assignment. Regarding gender scoring, the syllable structure name-finally is a cross-linguistic feature that all three groups share. Names ending in open syllables received a feminine score, while names ending in closed syllables received a masculine score, according to RDS, UDS, and ENS. This feature was confirmed in the previous literature on English names and proved to be correct in this study for JA names. The syllable-final /ii/, which activated feminine feature score for the three groups, is another cross-linguistic feature in names.

The second hypothesis, that names with more gender-weighted qualities are preferred, was supported by RDS and UDS. Names that were heavily gender-weighted were favoured above gender-weighted names that were created solely with one of the gender-weighted features. ENS responses, on the other hand, contradict this hypothesis.

The impact of the phonological and sound symbolic features on the choice of names was tested and supported by some of the responses to the questionnaire, especially with RDS. However, the surprising findings that contradict the predicted gender assignment of the pseudonames suggest that other considerations such as cultural, social, religious and political influences outweighed phonological and sound symbolic features in the choice of names.

8.3 Suggestions for Future Research

In order to strengthen any generalization about the phonology of names and gender, more work must also be done on naming in a cross-linguistic perspective.

While this study outlines the most notable phonological cues to gender in JA names and tested the cross-linguistic perception between JA and English, more research can be conducted cross-linguistically between JA and other languages. Cross-linguistically proved features in this study; especially open/closed syllable-ending, length of names, vowels and sonorants in male and female names syllable-final vowels and sound symbolism impact of gender differences can be tested across other languages and among speakers of other Arabic language dialects. The construction of a theory of naming requires such cross-linguistic comparisons. One of the drawbacks of this research is the limited number of English native speakers; my recommendation is to base the study on a larger number of participants.

Another recommendation for further study is to test the bouba-kiki effect using pseudonames that can be created on *bouba* and *kiki* sounds in Arabic language to test the universality of this impact, as this thesis didn't explore this precise question, instead it works with sound symbolism and the impact of bouba-kiki in actual JA names.

For further investigation in the phonaesthetics of names, it is worth studying names that have been officially changed and the newly chosen names. This may lead to more understanding of what makes some names prettier and what makes other ugly, and either support or add to the features discussed in this study.

I believe this thesis has provided insightful analysis of sound patterns of JA names, phonaesthetics of names and the impact of sound symbolism in gender differences. I, therefore, hope that it has made a considerable contribution to the phonology of JA names, and JA and English cross-linguistic issues in general.

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Appendices

Appendix 1. Top 100 Most Common Male and Female Names in Jordan 2017 with Transcription

Top 100 most common male names.			
	Name	Transcription	
1.	محمد	/mħammad/	ccvc.cvc
2.	احمد	/ʔaħmad/	cvc.cvc
3.	عمر	/ʕumaɾ /	cv.cvc
4.	امير	/ʔamiiɾ/	cv.cvvc
5.	يوسف	/juusif/	cvv.cvc
6.	ادم	/ʔaadam/	cvv.cvc
7.	كرم	/kaɾam/	cv.cvc
8.	ريان	/ɾajjaan/	cvc.cvc
9.	عبد الرحمن	/ʕabdilɾaħmaan/	cvc.cvc.cvc.cvvc
10.	عبد الله	/ʕabdallah/	cvc.cvc.cvc
11.	علي	/ʕalii/	cv.cvv
12.	زيد	/zeed/	cvvc
13.	ابراهيم	/ʔibɾahiim/	cvc.cv.cvvc
14.	راشد	/ɾaaʃid/	cvv.cvc
15.	هاشم	/haaʃim/	cvv.cvc
16.	جواد	/ʤawaad/	cv.cvvc
17.	محمود	/maħmuud/	cvc.cvvc
18.	جاد	/ʤaad/	cvvc
19.	حمزه	/ħamzih/	cvc.cvc
20.	تيم	/tajm	cvcc
21.	خالد	/xaalid/	cvv.cvc
22.	اوس	/ʔaws/	cvcc
23.	يامن	/jaamin/	cvv.cvc
24.	شهم	/ʃahm/	cvcc
25.	جود	/ʤuud/	cvvc
26.	سند	/sanad/	cv.cvc
27.	كريم	/kaɾiim/	cv.cvvc
28.	سيف	/seef/	cvvc
29.	عون	/ʕoon/	cvvc
30.	قيس	/qajs/	cvcc
31.	ليث	/lajθ/	cvcc
32.	وسام	/wesaam/	cv.cvvc
33.	فارس	/faaɾis/	cvv.cvc
34.	كنان	/kinaan/	cv.cvvc
35.	يحيى	/jaħjaa/	cvc.cvv
36.	الياس	/ʔiljaas/	cvc.cvvc
37.	قصي	/qusˤaj/	cv.cvc
38.	يزن	/jazan/	cv.cvc
39.	حسن	/ħasan/	cv.cvc
40.	اصيل	/ʔasˤiil/	cv.cvvc
41.	غيث	/ɣajθ/	cvcc
42.	سلطان	/sultˤaan/	cvc.cvvc
43.	ايهم	/ʔajham/	cvc.cvc
44.	عدي	/ʕudaj/	cv.cvc
45.	مصطفى	/musˤtˤafaa/	cvc.cv.cvv
46.	حسين	/ħsiin/	ccvvc
47.	اسامه	/ʔusaamah/	cv.cvv.cvc
48.	يمان	/jamaan/	cv.cvvc

49.	عمار	/ʕammaɾ/	cvc.cvc
50.	فهد	/fahid/	cv.cvc
51.	تميم	/tamiim/	cv.cvvc
52.	وسيم	/wasiim/	cv.cvvc
53.	ورد	/waɾd/	cvcc
54.	سليمان	/ʔisleemaan/	cvc.cvv.cvvc
55.	يزيد	/jaziid/	cv.cvvc
56.	انس	/ʔanas/	cv.cvc
57.	مراد	/muɾaad/	cv.cvvc
58.	سيف الدين	/seefʔiddiin/	cvvc.cvc.cvvc
59.	عز الدين	/ʕizziddiin/	cvc.cvc.cvvc
60.	معتز	/muʕtaz/	cvc.cvc
61.	عمران	/ʕimɾaan/	cvc.cvvc
62.	فيصل	/feesˤal/	cvv.cvc
63.	ينال	/janaal/	cv.cvvc
64.	مجد	/madʒd/	cvcc
65.	وليد	/waliid/	cv.cvvc
66.	عبد العزيز	/ʕabdel ʕaziiz/	cvc.cvc.cv.cvvc
67.	مالك	/maalik/	cvv.cvc
68.	صالح	/sˤaaliħ/	cvv.cvc
69.	موسى	/muusaa/	cvv.cvv
70.	حسام	/ħusaam/	cv.cvvc
71.	ياسين	/jasiin/	cv.cvvc
72.	عيسى	/ʕiisaa/	cvv.cvv
73.	راكان	/ɾaakaan/	cvv.cvvc
74.	اياد	/ʔijaad/	cv.cvvc
75.	معاذ	/muʕaað/	cv.cvvc
76.	جمال	/dʒamaal/	cv.cvvc
77.	مؤمن	/muʔmin/	cvc.cvc
78.	زياد	/zijaad/	cv.cvvc
79.	عامر	/ʕaamiɾ/	cvv.cvc
80.	ناصر	/naasˤiɾ/	cvv.cvc
81.	سراج	/siɾaadʒ/	cv.cvvc
82.	اسيد	/ʕusajd/	cv.cvcc
83.	خليل	/xaliil/	cv.cvvc
84.	صهيب	/sˤuhajb/	cv.cvcc
85.	عباده	/ʕubaadah/	cv.cvv.cvc
86.	رعد	/ɾaʕid/	cv.cvc
87.	بلال	/bilaal/	cv.cvvc
88.	نور الدين	/nuuɾiddiin/	cvv.cvc.cvvc
89.	مهند	/muhannad/	cv.cv.cvc
90.	سالم	/saalim/	cvv.cvc
91.	طلال	/tˤalaal/	cv.cvvc
92.	عبد الكريم	/ʕabdil kaɾiim/	cvc.cvc.cv.cvvc
93.	عمرو	/ʕamɾ/	cvvc
94.	سامي	/saamii/	cvv.cvv
95.	طارق	/tˤaaɾig/	cvv.cvc
96.	صدام	/sˤaddaam/	cvc.cvvc
97.	ايوب	/ʔajjuub/	cvc.cvvc
98.	ماجد	/maadʒid/	cvv.cvc
99.	ادهم	/ʔadham/	cvc.cvc
100.	زين	/zeen/	cvvc

Top 100 most common female names			
	Name	Transcription	
1.	جوري	/ʤuuɾii/	cvv.cvv
2.	ساره	/saaɾah/	cvv.cvc
3.	جود	/ʤuud/	cvvc
4.	سلمى	/salmaa/	cvc.cvv
5.	جنى	/ʤanaa/	cv.cvv
6.	زينه	/zeenah/	cvv.cvc
7.	ليان	/lajaan/	cv.cvvc
8.	لين	/liin/	cvvc
9.	مريم	/maɾjam/	cvc.cvc
10.	ميرا	/miiɾaa/	cvv.cvv
11.	حلا	/ħalaa/	cv.cvv
12.	غنى	/ɣinaa/	cv.cvv
13.	فرح	/faɾaħ/	cv.cvc
14.	تالا	/talaa/	cv.cvv
15.	نور	/nuuɾ/	cvvc
16.	رفيف	/ɾafiif/	cv.cvvc
17.	غزل	/ɣazal/	cv.cvc
18.	تولين	/tuuliin/	cvv.cvvc
19.	ايه	/ʔaajah/	cvv.cvc
20.	ريتال	/ɾiitaal/	cvv.cvvc
21.	ماريا	/maaɾjaa/	cvvc.cvv
22.	ياسمين	/jaasmiin/	cvvc.cvvc
23.	شهد	/ʃahid/	cv.cvc
24.	ماسه	/maasah/	cvv.cvc
25.	زين	/zeen/	cvvc
26.	الين	/ʔaliin/	cv.cvvc
27.	لجين	/luʤajn/	cv.cvcc
28.	ايلين	/ʔiiliin/	cvv.cvvc
29.	ملك	/malak/	cv.cvc
30.	سوار	/siwaaɾ/	cv.cvvc
31.	بيسان	/biisaan/	cvv.cvvc
32.	جوان	/ʤuwan/	cv.cvc
33.	نايا	/naajaa/	cvv.cvv
34.	فاطمه	/fatˤmih/	cvc.cvc
35.	رهف	/ɾahaf/	cv.cvc
36.	ريم	/ɾiim/	cvvc
37.	ميار	/majaaɾ/	cv.cvvc
38.	اسيل	/ʔasiil/	cv.cvvc
39.	غلا	/ɣalaa/	cv.cvv
40.	رغد	/ɾaɣad/	cv.cvc
41.	ملاك	/malaak/	cv.cvvc
42.	سيلين	/siiliin/	cvv.cvvc
43.	شام	/ʃaam/	cvvc
44.	يقين	/jaqiin/	cv.cvvc
45.	تاليا	/taljaa/	cvc.cvv

46.	الما	/ʔalmaa/	cvc.cvv
47.	سما	/samaa/	cv.cvv
48.	يارا	/jaɾaa/	cv.cvv
49.	سيدرا	/siidɾaa/	cvvc.cvv
50.	لمار	/lamaaɾ/	cv.cvvc
51.	لانا	/laanaa/	cvv.cvvc
52.	ندى	/nadaa/	cv.cvv
53.	ليليان	/liiljaan/	cvvc.cvvc
54.	بيلسان	/bajlasaan/	cvc.cv.cvvc
55.	تالين	/taaliin/	cvv.cvvc
56.	ميرال	/miiɾaal/	cvv.cvvc
57.	مسك	/misk/	cvcc
58.	يمان	Jamaan/	cv.cvvc
59.	رزان	/ɾazaan	cv.cvvc
60.	سيرين	/siiɾiin/	cvv.cvvc
61.	بانا	/baanaa/	cvv.cvv
62.	ريتاج	/ɾiitaaʤ/	cvv.cvvc
63.	عائشه	/ʕaaʃih/	cvv.cvc
64.	لمى	/lamaa/	cv.cvv
65.	اميره	/ʔamiiɾah/	cv.cvv.cvc
66.	روز	/ɾooz/	cvvc
67.	ديما	/diimaa/	cvv.cvv
68.	دانا	/daanaa/	cvv.cvv
69.	سدين	/sadiin/	cv.cvvc
70.	هيا	/hajaa/	cv.cvv
71.	جودي	/ʤuudii/	cvv.cvv
72.	شوق	/ʃoog/	cvvc
73.	هبه	/hibaa/	cv.cvv
74.	ميس	/majs/	cvcc
75.	لارين	/laaɾiin/	cvv.cvvc
76.	بيان	/bajaan/	cv.cvvc
77.	ميرنا	/miiɾnaa/	cvvc.cvv
78.	سجى	/saʤaa/	cv.cvv
79.	وتين	/watiin/	cv.cvvc
80.	رحمه	/ɾaħmah	cvc.cvc
81.	الاء	/ʔaalaaʔ/	cvv.cvvc
82.	جوانا	/ʤuuwaanaa/	cvv.cvv.cvv
83.	سالي	/saalii/	cvv.cvv
84.	اريام	/ʔaɾjaam/	cvc.cvvc
85.	ليلى	/lajlaa/	cvc.cvv
86.	امل	/ʔamaal/	cv.cvvc
87.	تيا	/tiijaa/	cvv.cvv
88.	بشرى	/buʃɾaa/	cvc.cvv
89.	قمر	/gamaɾ/	cv.cvc
90.	جوليا	/ʤuuljaa/	cvvc.cvv
91.	كنده	/kindaa/	cv.cvv
92.	مرح	/maɾaħ/	cv.cvc
93.	بتول	/batuul/	cv.cvvc

94.	ايلاف	/ʔiilaaf/	cvv.cvvc
95.	تقى	/tuqaa/	cv.cvv
96.	رتيل	/ɾatiil/	cv.cvvc
97.	حنين	/ħaniin/	cv.cvvc
98.	سيلا	/siilaa/	cvv.cvv
99.	ماريه	/maaɾjah/	cvvc.cvc
100.	ايلا	/ʔiilaa/	cvv.cvv

Appendix 2. Participant Information Sheet

UNIVERSITY OF SUSSEX

PARTICIPANT INFORMATION SHEET

Study title

The Phonaesthetics of Jordanian First Names

'*You are being invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully*'

WHAT IS THE PURPOSE OF THE STUDY?

The study aims at investigating the phonological adaptation of the foreign names that are used in Jordan.

WHY HAVE I BEEN INVITED TO PARTICIPATE?

You have chosen to take part in the study as a native speaker of either Arabic or English Language. There will be ten people in your group, five native speakers of Arabic Language mainly Jordanian Arabic, and five native speakers of English language.

DO I HAVE TO TAKE PART?

'It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason'.

‘By choosing to either take part or not take part in the study will have no impact on your marks, assessments or future studies.’

WHAT WILL HAPPEN TO ME IF I TAKE PART?

You will be sent a list of English names through WhatsApp. You need to read the names first then record a voice message while reading the names and send it back to the researcher. The duration of this process will be around 5-10 minutes.

WHAT ARE THE POSSIBLE DISADVANTAGES AND RISKS OF TAKING PART? (WHERE APPROPRIATE)

You should describe any disadvantages or 'costs' involved in taking part in the study, including the time involved.

No risk or disadvantage of taking part in this study. the audio recording will be around 5-10 minutes.

WILL MY INFORMATION IN THIS STUDY BE KEPT CONFIDENTIAL?

All your information will be kept strictly confidential. the participants' personal details that are needed are : native language gender, and level of education. These details will be anonymous, as they will be used to decide in which group test you will participate.

WHAT WILL HAPPEN TO THE RESULTS OF THE RESEARCH STUDY?

The results will be analysed and used in the thesis to investigate the adaptation of the foreign names in Jordanian Arabic.

WHO IS ORGANISING AND FUNDING THE RESEARCH?

The researcher is conducting the research as a PhD student at University of Sussex, School of English. This research is funded by AlAlbayt University ,Jordan.

WHO HAS APPROVED THIS STUDY?

This research has been approved through the university of Sussex ethical review process http://www.sussex.ac.uk/staff/research/governance/erp_overview

The ethical review application number of the study: ER/BA301/2

CONTACT FOR FURTHER INFORMATION

Contact details for further information:

Bara'ah AlAbabneh

Linguistics PhD students

Email: B.Alababnneh@sussex.ac.uk

Please don't hesitate to contact my supervisor Dr Lynne Cahill if you have any concerns about the way in which the study has been conducted.

Dr Lynne Cahill

Email: lynneca@sussex.ac.uk

if you have any concerns about the way in which the study has been conducted, you should contact the Chair of the C-REC who reviewed the project

Dr. Liz McDonnell

Email: E.J.Mcdonnell@sussex.ac.uk

"University of Sussex has insurance in place to cover its legal liabilities in respect of this study."

THANK YOU FOR TAKING TIME TO READ THE INFORMATION SHEET

DATE

5/7/2018

Appendix 3. Consent Form for Project Participants

CONSENT FORM FOR PROJECT PARTICIPANTS

Title of Project: The Phonaesthetics of Jordanian First Names

Name of Researcher and School: Bara'ah AlAbabneh

C-REC Ref no:ER/BA301/1

I confirm that by sending my voice message recording to the researcher through WhatsApp , I consent to the following:

I consent to receive the names list through WhatsApp.

*I agree to send a*voice message recording to the researcher through WhatsApp.

I agree to making myself available for a further interview should it be required

I understand that any information I provide is confidential, and that no information that I disclose will lead to the identification of any individual in the reports on the project, either by the researcher or by any other party

I have read the information sheet, had the opportunity to ask questions and I understand the principles, procedures and possible risks involved.

I consent to the processing of my personal information and data for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the General Data Protection Regulation (GDPR) 2016.

I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project (up to September 2021) without being penalised or disadvantaged in any way.

I agree to take part in the above University of Sussex research project

Appendix 4. Phonetic Transcription of Names as Pronounced by Native Speaker Participants.

Phonetic transcription of names as pronounced by English native speaker participants				
	Name	**Participant 1**	**Participant 2**	**Participant 3**
1	Rachel	/ɹeɪʧəl/	/ɹeɪʧəl/	/ɹeɪʧəl/
2	Ellen	/ɛlən/	/ɛlən/	/ɛlən/
3	Celine	/sɛliːn/	/sɛliːn/	/sɛliːn/
4	Angelina	/ændʒɛlinə/	/əndʒəliːnə/	/əndʒəliːnə/
5	Madeleine	/mædəlɛn/	/mædlɪn/	/mædlɪn/
6	Diana	/daɪænə/	/dəjænə/	/dəjænə/
7	Ryan	/ɹɑjən/	/ɹɑjən/	/ɹɑjən/
8	Jacqueline	/dʒækliːn/	/dʒæklən/	/dʒæklən/
9	Jayden	/dʒeɪdən/	/dʒeɪdən/	/dʒeɪdən/
10	Daniel	/dænjəl/	/dænjəl/	/dænjəl/
11	Veronica	/vəɹɒnɪkə/	/vəɹɒnɪkə/	/vəɹɒnɪkə/
12	Alice	/æləs/	/æləs/	/æləs/
13	Olivia	/ɛlɪvɪə/	/ɒlɪvɪə/	/ɒlɪvɪə/
14	William	/wɪljəm/	/wɪljəm/	/wɪljəm/
15	Martha	/mɑːθə/	/mɑːθə/	/mɑːθə/
16	Sandra	/sɑːndrə/	/sɑːndrə/	/sɑːndrə/
17	Christina	/kɹɪstiːnə/	/kɹɪstiːnə/	/kɹɪstiːnə/
18	Christine	/kɹɪstiːn/	/kɹɪstiːn/	/kɹɪstiːn/
19	Jessica	/dʒɛsɪkə/	/dʒɛsɪkə/	/dʒɛsɪkə/

20	Andrew	/ændɹuː/	/ændɹuː/	/ændɹuː/
21	Samantha	/səmɛnθə/	/səmænθə/	/səmænθə/
22	Charley	/ʧɑːliː/	/ʧɑːliː/	/ʧɑːliː/
23	Adele	/ədeɪl/	/ədeɪl/	/ədeɪl/
24	Joseph	/ʤəʊzəf/	/ʤəʊzəf/	/ʤəʊzəf/
25	Lauren	/lɔrən/	/lɔrən/	/lɔrən/
26	Vivian	/vɪvɪən/	/vɪvɪən/	/vɪvɪən/
27	George	/dʒɔ:dʒ/	/dʒɔ:dʒ/	/dʒɔ:dʒ/
28	Oliver	/ɒlɪvə/	/ɒlɪvə/	/ɒlɪvə/
29	Joel	/dʒol/	/dʒol/	/dʒoəl/
30	Eleanor	/ɛlənə /	/ɛlənə/	/ɛlənə/
31	Ruben	/ɹuːbɪn/	/ɹuːbɪn/	/ɹuːbɪn/
32	Janet	/dʒænɛt/	/dʒænɛt/	/dʒænɛt/
33	Mia	/mɪə/	/mɪə/	/mɪə/
34	Isla	/ailə/	/ailə/	/ailə/
35	Paula	/pɔːlə/	/pɔːlə/	/pɔːlə/
36	Peter	/piːtə/	/piːtə/	/piːtə/
37	Suzanne	/su:zæn/	/su:zæn/	/su:zæn/
38	Simon	/saimən/	/saimən/	/saimən/
39	Victor	/vɪktə/	/vɪktə/	/vɪktə/
40	Gabriel	/geɪbɹɪəl/	/geɪbɹɪəl/	/geɪbɹɪəl/

Appendix 5. Phonetic Transcription of Names as Pronounced By JA Speakers.

(No English Proficiency)

Phonetic transcription of names as pronounced by JA speakers. (No English proficiency)						
	Name	**Participant 1**	**Participant 2**	**Participant 3**	**Participant 4**	**Participant 5**
1	Rachel	/ɾaaʃil/	/ɾaaʃeel/	/ɾaaʃeel/	/ɾaaʃeel/	/ɾaaʃeel/
2	Ellen	/ʔaliin/	/ʔaliin/	/ʔiiliin/	/ʔiliin/	/ʔaliin/
3	Celine	/siiliin/	/siliin/	/siliin/	/siliin/	/siiliin/
4	Angelina	/ʔaandʒilii/	/ʔaandʒilii/	/ʔindʒiliina/	/ʔindʒiliina/	/ʔaandʒiliin/
5	Madeleine	/maadliin/	/maadliin/	/maadliin/	/maadliin/	/maadliin/
6	Diana	/ʔidjaanaa/	/ʔidjaanaa/	/ʔidjaanaa/	/ʔidjaanaa/	/djaanaa/
7	Ryan	/ɾaajaan/	/ɾajaan/	/ɾajjaan/	/ɾajaan/	/ɾaajaan/
8	Jacqueline	/dʒaakliin/	/dʒaaklin/	/dʒaakilin/	/dʒaakliin/	/dʒaakliin/
9	Jayden	/dʒaajdin/	/dʒaajdin/	/dʒaadiin/	/dʒaajdin/	/gaajdin/
10	Daniel	/daanjaal/	/daanjaal/	/daanjaal/	/daanjaal/	/daanjaal/
11	Veronica	/fiiɾooniika/	/fiɾooniika/	/fiɾoonikaa/	/viɾoonika/	/fiɾooniikaa/
12	Alice	/ʔalis/	/ʔaliis/	/ʔaliis/	/ʔaliis/	/ʔaliis/
13	Olivia	/ʔuliifjaa/	/ʔulifjaa/	/ʔuliif/	/ʔulifaa/	/ʔuiivjaa/
14	William	/wiljaam/	/wiljaam/	/wiljaam/	/wiiljaam/	/wiljaam/

15	Martha	/maaɾθaa/	/maaɾθaa/	/maaɾθaa/	/maaɾθaa/	/maaɾθaa/
16	Sandra	/saandɾa/	/saandɾa/	/saandɾa/	/saandɾa/	/saandɾa/
17	Christina	/ʔikɾistiina/	/ʔikɾistiina/	/ʔikɾistiina/	/kɾistiina/	/kɾistiina/
18	Christine	/ʔikɾistin/	/ʔikɾistin/	/ʔikɾistin/	/kɾistin/	/kɾistin/
19	Jessica	/ʤisiikaa/	/ʤasikaa/	/ʤiisikaa/	/ʤisiikaa/	/ʤiisikaa/
20	Andrew	/ʔandɾuu/	/ʔandɾoo/	/ʔandɾoo/	/ʔandɾoo/	/ʔaandɾoo/
21	Samantha	/samanθa/	/saamaanθ/	/saamaanθ/	/saamaanθa/	/saamaanθa/
22	Charley	/ʧaarlii/	/ʃaarlii/	/ʃaarlii/	/ʧaarlii/	/ʃaarlii/
23	Adele	/ʔaadiil/	/ʔadiil/	/ʔidil/	/ʔadeel/	/ʔaadil/
24	Joseph	/ʤoozeef/	/ʤooziif/	/ʤoozif/	/ʤoozeef/	/ʤoozeef/
25	Lauren	/looriin/	/looriin/	/looriin/	/looriin/	/looriin/
26	Vivian	/fiifjaan/	/viivjaan/	/viivjaan/	/viivjaan/	/fiifjaan/
27	George	/ʤooɾʤ/	/ʤooɾʤ/	/ʤooɾʤ/	/ʤooɾʤ/	/ʤooɾʤ/
28	Oliver	/ʔulivaɾ/	/ʔuliivaɾ/	/ʔulivaɾ//	/ʔulivaɾ/	/ʔulivaɾ/
29	Joel	/ʤwiil/	/ʔidʒweel/	/ʤoowil/	/ʔidʒweel/	/ʔidʒweel/
30	Eleanor	/ʔiljaanooɾ/	/ʔiljaanooɾ/	/ʔaljaanooɾ/	/ʔaljaanooɾ/	/ʔiljaanooɾ/
31	Ruben	/ɾoobiin/	/ɾoobiin/	/ɾoobeen/	/ɾoobiin/	/ɾoobiin/
32	Janet	/dʒaaneet/	/dʒaaneet/	/dʒaaneet/	/dʒaaneet/	/dʒaaneet/

33	Mia	/mijaa/	/miijaa/	/majaa/	/miijaa/	/miijaa/
34	Isla	/ʔeelaa/	/ʔiilaa/	/ʔajlaa/	/ʔiilaa/	/ʔiilaa/
35	Paula	/bawla/	/bawla/	/bawla/	/bawla/	/bawla/
36	Peter	/biitaɾ/	/biitaɾ/	/biitaɾ/	/biitaɾ/	/biitaɾ/
37	Suzanne	/suzaan/	/suzaan/	/suzaan/	/suzaan/	/suzaan/
38	Simon	/siimoon/	/siimoon/	/siimoon/	/siimoon/	/siimoon/
39	Victor	/fiktooɾ/	/fiktuɾ/	/fiktooɾ/	/fiktuɾ/	/fiktooɾ/
40	Gabriel	/gaabɾeel/	/gaabɾeel/	/gaabɾeel/	/gaabɾiil/	/gaabɾeel/

Appendix 6.Phonetic Transcription of Names As Pronounced by JA Speakers. (With Good English Proficiency)

Phonetic transcription of names as pronounced by JA speakers. (with good English proficiency						
		Participant 1	**Participant 2**	**Participant 3**	**Participant 4**	**Participant 5**
1	Rachel	/ɾaʃeel/	/ɾeeʧil/	/ɾeeʧil/	/ɾaʧeel/	/ɾaʃeel/
2	Ellen	/ʔilin/	/ʔilin/	/ʔiliin/	/ʔilin/	/ʔilin/
3	Celine	/siliin/	/siliin/	/siliin/	/siliin/	/siliin/
4	Angelina	/ʔandʒiliina/	/ʔandʒiliina/	/ʔandʒiliina/	/ʔandʒiliina/	/ʔandʒiliina/
5	Madeleine	/madleen/	/madliin/	/madalajn/	/madliin/	/madlin/
6	Diana	/dajana/	/dajana/	/dajana/	/dajana/	/dajana/
7	Ryan	/ɾajaan/	/ɾajaan/	/ɾajaan/	/ɾajan/	/ɾajan/
8	Jacqueline	/dʒaakliin/	/dʒaakliin/	/dʒikiliin/	/dʒaakliin/	/dʒaakliin/
9	Jayden	/dʒeedɪn/	/dʒeedɪn/	/dʒeedɪn/	/dʒeedɪn/	/dʒeedɪn/
10	Daniel	/danjaal/	/danjeel/	/danjeel/	/danjeel/	/danjeel/
11	Veronica	/viɾoonika/	/viɾoonika/	/viɾunika/	/viɾoonika/	/viɾunika/
12	Alice	/ʔalɪs/	/ʔalɪs/	/ʔalɪs/	/ʔalɪs/	/ʔalɪs/
13	Olivia	/ʔulivjaa/	/ʔulivjaa/	/ʔoolivjaa/	/ʔoolivjaa/	/ʔoolivjaa/
14	William	/wiljam/	/wiljam/	/wiljam/	/wiljam/	/wiljam/
15	Martha	/maaɾθa/	/maaɾθa/	/maaɾθa/	/maaɾθa/	/maaɾθa/
16	Sandra	/saandɾa/	/saandɾa/	/saandɾa/	/saandɾa/	/saandɾa/
17	Christina	/kɾistiina/	/kɾistiina/	/kɾistiina/	/kɾistiina/	/kɾistiina/
18	Christine	/kɾistiin/	/kɾistiin/	/kɾistiin/	/kɾistiin/	/kɾistiin/
19	Jessica	/dʒasika/	/dʒisɪka/	/dʒasika/	/dʒisɪka/	/dʒisɪka/
20	Andrew	/ʔandɾoo/	/ʔandɾoo/	/ʔandɾoo/	/ʔandɾuu/	/ʔandɾoo/
21	Samantha	/samaanθa/	/samaanθa/	/samaanθa/	/samaanθa/	/samaanθa/
22	Charley	/ʧaaɾli/	/ʧaaɾlii/	/ʧaaɾli/	/ʧaaɾli/	/ʧaaɾli/
23	Adele	/ʔadeel/	/ʔadeel/	/ʔadeel/	/ʔadiil/	/ʔadeel/
24	Joseph	/dʒuuzeef/	/dʒuuziif/	/dʒooziif/	/dʒoozif/	/dʒooziif/
25	Lauren	/lawɾin/	/luɾiin/	/looɾiin/	/looriin/	/looriin/
26	Vivian	/vivjaan/	/vivjaan/	/vivjaan/	/vivjaan/	/vivjaan/
27	George	/dʒooɾdʒ/	/dʒooɾdʒ/	/dʒooɾdʒ/	/dʒooɾdʒ/	/dʒooɾdʒ/

28	Oliver	/ʔulivaɾ/	/ʔulivaɾ/	/ʔulivaɾ/	/ʔoolivaɾ/	/ʔulivaɾ/
29	Joel	/dʒuweel/	/dʒuweel/	/dʒuweel/	/dʒuweel/	/dʒuweel/
30	Eleanor	/ʔilinooɾ/	/ʔilaanuuɾ/	/ʔilinooɾ/	/ʔilinooɾ/	/ʔiilinooɾ/
31	Ruben	/ɾuubin/	/ɾuubin/	/ɾoopin/	/ɾoopin/	/ɾuubin/
32	Janet	/dʒaneet/	/dʒaniit/	/dʒaneet/	/dʒanit/	/dʒaneet/
33	Mia	/mija/	/mija/	/mija/	/mija/	/mija/
34	Isla	/ʔajla/	/ʔajla/	/ʔila/	/ʔila/	/ʔajla/
35	Paula	/bawla/	/pawla/	/pawla/	/bawla/	/bawla/
36	Peter	/biitaɾ/	/piitaɾ/	/piitaɾ/	/piitaɾ/	/piitaɾ/
37	Suzanne	/suuzaan/	/suuzaan/	/suuzaan/	/suuzaan/	/suuzaan/
38	Simon	/siimoon/	/sˤaimun/	/siimun/	/sajmun/	/siimoon/
39	Victor	/viktuɾ/	/fiktuɾ/	/viktuɾ/	/viktuɾ/	/viktuɾ/
40	Gabriel	/gaabɾijal/	/gaabɾijil/	/gibɾijil/	/gaabɾijil/	/gaabɾijeel/

Appendix. 7 Neutral and the Gender-Weighted Pseudonames

Neutral name /nuusiɾ/		
Feature	**Male-weighted names**	**Female-weighted names**
Name initial	/ħuusiɾ/	/ɾuusiɾ/
Syllable-initial	/nuuɾiɾ/	/nuumiɾ/
Syllable-final	/naasiɾ/	/niisiɾ/
Vowels	/naasiɾ/	/niisaɾ/
Name final	/nuusim/	/nuusin/
All features	/ħaaɾim/	/ɾiiman/

Neutral name /ʤubi/		
Feature	**Male-weighted names**	**Female-weighted names**
Name-initial	/jubi/	/lubi/
Syllable-initial	/ʤuɾi/	/ʤuti/
Syllable-final	/ʤibi/	/ʤiibi/
Name-final	/ʤubis/	/ʤubaa /
Syllable-structure	/ʤuɾis/	/ʤiibaa/
All features	/jiɾis/	/liitaa/

Neutral name /fuuki/		
Feature	Male-weighted names	Female-weighted names
Name-initial	/juuki/	/buuki/
Syllable-initial	/fuuhi/	/fuuja/
Syllable-final	/faaki/	/fiiki/

Vowels	/faaki/	/fiikaa/
Name-final /syllable structure	/fuukid/	/fuukin/
All features	/jaahid/	/biijaan/

Neutral name: /kunsaaf/		
Feature	**Male-weighted names**	**Female-weighted names**
Name initial	/ʕunsaaf/	/ʃunsaaf/
Syllable-initial	/kunsˤaaf/	/kunmaaf/
Syllable-final	/kumsaaf/	/kiisaaf/
Vowels	/kinsif/	/kiisaaf/
Name-final	/kunsaam/	/kunsaah/
All features	/ʕimsˤim/	/ʃiimaah/

Appendix. 8 Link to the Online Questionnaire

https://docs.google.com/forms/u/1/d/1vIMTYemSiWSaSGqrULtX6UjvJomJUx9lhm7SefcnZeQ/edit#start=openform