



A Variationist Analysis of /ð/ in Ammani Arabic

Rozan Al-Hloul¹ · Abdel Rahman Mitib Altakhaineh¹  · Marwan Jarrah¹ · Ekab Al-shawashreh²

Received: 11 February 2023 / Accepted: 15 April 2023 / Published online: 26 April 2023
© Fudan University 2023

Abstract

This study examines the realizations of variable /ð/ sound in Ammani Arabic (AA) as well as the correlation between this variation and a number of sociolinguistic factors. Four phonetic variants ([ð̤], [d], [z] and [ð̤^h]), four social factors (sex, age, region and educational attainment) and two linguistic factors (the position of the variant in the word and the syntactic category of the word) were investigated. To achieve the objectives of the study, 40 native speakers of AA were interviewed for approximately 30 min each. A multivariate analysis using GoldVarb X was carried out in order to discern the effects of the operationalized factors on the variant choice. The results confirmed that the social and linguistic factors condition the variant choice. Additionally, the study examined the possible social meanings of variation in pronouncing the variable /ð/ in AA adopting Silverstein's (Lang Commun, 23(3–4), 193–229, [https://doi.org/10.1016/s0271-5309\(03\)00013-2](https://doi.org/10.1016/s0271-5309(03)00013-2), 2003) concept of indexical order. The sociolinguistic investigation of the variable /ð/ in AA appears to suggest that it is an object of stylistic variation.

Keywords Sociolinguistics · Phonetic variation · Indexicality · Social meanings · Ammani Arabic

✉ Abdel Rahman Mitib Altakhaineh
a.altakhaineh@ju.edu.jo

Rozan Al-Hloul
rozanabdullah@yahoo.com

Marwan Jarrah
m.jarrah@ju.edu.jo

Ekab Al-shawashreh
shawashreh@yu.edu.jo

¹ The University of Jordan, Amman, Jordan

² Yarmouk University, Irbid, Jordan

1 Introduction

Arabic language, which is one of the Semitic languages, is spoken in many areas such as most of the Arabian Peninsula, North Africa and other parts of the Middle East. The Arabic language, with all its linguistic richness, lends itself smoothly to the study of language variation and change. It comprises a huge number of spoken dialects in around 60 countries that differ from one another (and from CA and MSA) lexically, phonologically, syntactically and morphologically (Huneety et. al. 2021). For example, Jordanian Arabic (JA) is an Arabic dialect that is spoken in Jordan by millions of people (Zibin 2019). Many studies have been carried out on JA (e.g., Al-Khatib 1988; Al-Tamimi 2001; Al-Wer 2007; among many others). JA can be divided into three main spoken dialects: the Bedouin dialect, the Rural dialect and the Urban dialect (see Rakhieh 2009). In Jordan, urban dialects are largely spoken in cities like Amman. The dialect of Amman (AA) is not homogeneous, but it is a mixture of many sub-dialects spoken by speakers from different origins—Jordan, Lebanon, Palestine, Syria, Caucasia and Armenia (Al-Wer 2007). A number of studies have shown a clear division between West Amman and East Amman. For example, Ababsa (2011, 205) mentioned that “social disparities within the city [of Amman] continue to grow stronger between West Amman and East Amman.” One of the important differences between West Amman and East Amman is linguistic (Rakhieh 2009).

There is variation between the speakers of any language in the way that they use it. Recent theories of variation (e.g., Eckert 2000, 2012) do not only take into consideration the main tenets of variationist sociolinguistics, but also adding deeper layers of social analysis. In this regard, Eckert (2012) views the meaning of variation as a main characteristic of language. There is a solid history of studies in linguistics viewing that how certain language forms have acquired social meanings in a speech community over time (e.g., Johnstone and Kiesling 2008). The meanings of variables are not fixed or precise but rather form a field of potential meanings or a group of ideologically related meanings, any one of these meanings can be activated depending on the situated use of the linguistic variable (Eckert 2008). Based on our observation, the linguistic variable /ð/ has never been investigated using the notion of indexical field as a framework. Therefore, this study is an attempt to fill this gap by carrying out a study that aims to reveal the correlation between social and linguistic factors on the one hand, and the distribution of the [ð], [d], [z] and [ð^h] in AA on the other hand. The current study examines how the use of a certain variant of the variable /ð/ can help Ammani speakers express certain social meanings and construct remarkable identities.

2 Literature Review

2.1 Theoretical Framework

The pronunciation of a particular variable differs among the speakers of a language. Labov (1994) assumes that this is the product of different sociohistorical processes of contact, linguistic change and acquisition. Many studies have shown that manipulating

a certain variable can notably change listeners' opinions of speakers (Plichta and Preston 2005; Walker 2007; Szakay 2008; Drager 2010, among others), revealing how one variable can convey indexical meaning. Walker et al. (2014) suggest that a variable is tied to a field of related stances and qualities (e.g., careful, angry, educated, fake). While a variable might index a certain characteristic in the speech of a group, it may also be employed to index a semantically different but related characteristic in the speech of another group. Walker et al. (2014) note that the variability in meaning guided Eckert (2008), based on Silverstein (2003), to introduce the notion of indexical fields of meaning for language variables. Silverstein (2003) proposes a model to the examination of social meaning in variation. He claims that indexical ordering displays how linguistic characteristics cannot be in themselves ideological. However, they become ideological depending on the way in which they are attributed meaning via multiple indexical processes. Silverstein (2013) discusses that a first-order indexicality occurs when the linguistic characteristics of variables are available, but the speakers are not aware of them in the same dialect region or may not have sociological meaning yet. A second order of indexicality is when these characteristics start to take on sociological importance such that ideological meanings become associated with the characteristics. A third order of indexicality occurs when the characteristics are widely used such that they can be employed, attached to a certain area, and the social meanings associated with them have altered. Eckert (2008) developed an equally important concept which is the indexical field. This concept focuses on the different social meanings that are attributed through varieties.

Eckert (2008) states that the social meanings of variables are not fixed or precise but rather they are a field of possible meanings—an indexical field, or group of ideologically associated meanings, each one of them can be activated and employed in the situated use of the linguistic variable. Eckert (2008) also asserts that the indexical field is considered fluid, and any new activation can have the possibility to alter the field by constructing ideological connections. Therefore, variation forms an indexical system that brings ideology in language, and that is parcel and part of the creation of ideology.

The current study adopts Silverstein's (2003) model of indexicality as well as Eckert's (2008) notion of the indexical field in order to investigate how the use of the four variants ([ð], [d], [z] and [ð^h]) helps Ammani speakers convey certain social meanings and construct distinctive identities in Amman.

2.2 Previous Studies on Phonological Variation

Many studies have examined language variation in Arabic (Al-Wer 1991; Al-Tamimi 2001; Al-Harashshah 2014; Mayuuf and Majeed 2020; Al-Omari et al. 2022; Hamdieh et al. 2022; Al-Khawaldeh, et al. 2023; among others). However, a few of them have accounted for the possible social meanings communicated through the use of different language forms.

Al-Wer (1991) collects her data from three different Jordanian towns, namely, Karak, Ajloun and Sult. She studies how the Jordanian dialect is influenced by the urban Palestinian dialect. The Palestinian variety contains the stop variants [d], [t] and [d^h], whereas Jordanian dialect includes the interdental variants [ð^h], [θ] and [ð].

She finds that the stop variants [d^ʕ] and [t] are commonly used by young Jordanian women. In addition, she concludes that the stop variants [d^ʕ] and [t] are largely used as the level of females' education is higher.

Al-Wer (1999) carries out an important research and studied the effect of education and age on the use of four different phonological variables (/d/, /θ/, /dʒ/ and /q/) in Jordanian women's speech. She reveals that well-educated and young Jordanian women who communicate outside their communities use non-local variants of the community more than less educated and old women who are often exposed to the pressure of local network. In another study, Al-Wer (1999) discusses the issue of the social and linguistic correlates of sound diffusion referring to the variables /d/ and /θ/ in the speech of Jordanian females. Her findings reveal that interdental variables show the largest amount of variation. In addition, Jordanian women tend to use stop variants (i.e., [t] and [d]) more often in their speech.

Al-Ali and Arafa (2010) investigate the correlation between some social and linguistic factors and the different realizations of the linguistic variables /ð/, /θ/ and /dʒ/ in JA particularly in Irbid, a city located in north of Jordan. Al-Ali and Arafa use interviews to collect data which are elicited from 40 participants by using instrumental and auditory techniques. The findings reveal that /θ/ is found to have a standard and local variant [θ] (e.g., [θala:θ]), and two non-local variants [t] (e.g., [tala:t]) and [s] (e.g., [sala:s]). As for the linguistic variable (ð), it is found that it has four variants: a standard and local variant [ð] (e.g., [ðahaba]) and three non-local ones [t], [d] (e.g., [dahaba]), and [z] (e.g., [zahaba]). As for the linguistic variable (dʒ), it also has four variants, [dʒ] (e.g., [wædʒh]) as a standard and local variant, and three non-local variants [ʃ], [ʒ] (e.g., [wæʒh]), and [tʃ]. The results also reveal that sex and education are found to be significant factors in determining variant choice.

Al-Wer and Herin (2011) study the lifecycle of /q/ in Jordan. Variation in the variable /q/ in Amman requires the two main variants [g] and [ʔ]. These two variants are considered regional variants. Traditional Jordanian dialects have the variant [g], whereas urban Palestinian dialects have the variant [ʔ]. Al-Wer and Herin found that the old social constraints on the language variation have continued. In addition, they have been complicated by adding new constraints. The results reveal that Jordanians in Amman still use [g], usually as a marker of Jordanian identity. Also, it is found that although the use of the glottal stop [ʔ] is viewed as a sign of urbanity in Amman, the variant [g] is a local and practical variant particularly for Jordanian men from both dialectal backgrounds. In general, the variant [g] is the norm outside Amman.

Alhawamdeh (2016) examines the palatalization of the linguistic variables /l/ and /k/ in the stem and suffix of the words in the Jordanian town, Sūf. Alhawamdeh investigates these two linguistic variables due to their most traditional and salient phonological features in Jerash. The researcher studies the correlation between a number of social (sex and age) and linguistic factors (the preceding linguistic environment and the following linguistic environment of the sound). The findings reveal that female speakers highly prefer palatalization in the stem of the word, whereas male speakers do not prefer it. In addition, it is found that female speakers use the colloquial dialect more than males in Sūf. Palatalization in the suffix is found to be restricted to address female speakers.

In a recent study, Bader and Bani-Ali (2020) investigate some important aspects of phonological variation in the speech of Syrians in Jordan taking into account some social factors (age and sex). This study examines four MSA sounds (/d^s/, /q/, /ð/ and /θ/). It also views the pronunciation of these sounds in Damascene Arabic and how they are affected by JA. A phonological and social completion task is used to elicit the data. One hundred Syrian participants' responses to twenty-five social and phonological situations are coded to examine the use rates of rural Jordanian variables by Syrian men and women. The findings of the study reveal that the Damascene phonological variables are often switched to Jordanian variables. The results also reveal that the variant /g/ is frequently used by Syrian participants, while the variant /d^s/ is seldom used in Syrian participants' speech. Finally, it is found that Syrian females are less willing to shift to the Jordanian pronunciation in comparison with Syrian males.

Al-Omari et al. (2022) examine the relationship between tentative language use on one hand and Jordanian people's self-awareness of their own social identities based on the context of self-categorization theory. The researchers ask the participants to discuss specific status/gender-neutral topics after priming one of three main social identities: their distinct social status identity, their distinct gender identity or their shared national identity. Each discussion was firstly audiotaped and then transcribed. The findings reveal that Jordanian females with high-status are less assertive compared to Jordanian males with low-status especially in their cross-gender verbal communication. Also, the results show that tentative language is found to be gender-preferred in Jordanian society, less influenced by the salient social identities other than gender.

This work attempts to answer the following questions:

- i. What is the distribution of the variants [ð], [d], [z] and [ð^s] in (AA)?
- ii. To what extent do differences in terms of sex, age, region and educational level influence the choice of the variant in the speech community of Amman?
- iii. What are the linguistic factors that determine the variant choice of the variable /ð/?

Table 1 Sampling population according to speaker's sex, age, education and region

Level of education	M						F						Total
	E			W			E			W			
	Y	M	O	Y	M	O	Y	M	O	Y	M	O	
L	1	1	1	2	1	1	1	2	1	1	1	1	14
M	1	1	1	1	2	1	1	1	1	2	1	1	14
H	1	1	1	1	1	1	1	1	1	1	1	1	12
Total	3	3	3	4	4	3	3	4	3	4	3	3	40

Sex (M: Male, F: Female), Age (Y: Young, M: Middle-aged, O: Old), Education (H: High, M: Middle, L: Low), Region (E: East Amman, W: West Amman)

3 Methods and Procedures

3.1 The Corpus

The corpus of the study consists of forty audio-recorded interviews (Labov 1984) of male and female speakers of AA who were born and raised in Amman. Each interview lasts between 30 and 40 min.

3.1.1 The Sample

To conduct robust statistical comparisons, variationists usually seek to choose a sample with a balanced number of participants who are classified according to certain social variables such as sex, age and educational level (Labov 1966). In this study, the sample consists of 40 male and female Ammani speakers living in West Amman and East Amman. The participants are stratified according to their sex (male, female), age (young, middle-aged, old), education (low, middle, high) and region (East Amman, West Amman).

Participants are categorized according to their sex to investigate whether or not this social factor affects variant choice and to assess the linguistic choice of men and women in leading any potential linguistic change in progress (Labov 1990; Al Omari et.al. 2022; among others). They are stratified into three age groups as viewed in Table 1. The younger participants are those aged (18–39) years old, middle-aged (40–59) years old, and the older participants are those who aged (60–75) years old. This categorization is adopted by many researchers (e.g., Czaja and Sharit 1998). Additionally, previous studies show that the level of education is a key factor of variant choice, especially in the Arabic-speaking world (Al-Tamimi 2001; Al-Ali and Arafa 2010; Al Wer 2013; Al Omari et.al. 2022; among others). Al Wer (2013) assumes that education is seen as the main tool by which the members of Arabic-speaking communities can have opportunities of communication with the people who use the target features. In this study, participants are classified according to their level of education so as to examine whether or not the level of education as a social factor affects the variant choice. Participants who have secondary degree or less are stratified as low educated, while participants who have a diploma or bachelor's degree are classified as middle educated. Participants who hold graduate degrees such as master or PhD are classified as highly educated. These three levels of education are used by many other researchers (e.g., Letenneur et al. 2000).

Participants are categorized according to their area of residence. In the current study, the regions are East Amman and West Amman. This division between East Amman and West Amman is both demographically and socially motivated. Ababsa (2011) mentioned that “social disparities within the city [of Amman] continue to grow stronger between West Amman and East Amman. These disparities tie in with morphological differences between informal housing communities developed near the Palestinian camps of Wahdat and Jabal Hussein, with their self-built buildings; and West Amman neighborhoods with family-owned four story buildings,

interspersed with villas and office blocks.” West Amman is mostly inhabited by Jordanians who come from almost all other regions of Jordan to Amman for study or work. It is also inhabited by Palestinian Jordanians who descend from wealthy families and autocracies. West Amman is also a favorite place for the Iraqi minority in addition to Chechens and Circassians who came to Amman during the last century. On the other hand, East Amman is, for the most part, still a home for Jordanian nationals with a Palestinian origin. According to Horesh (2021), approximately three million Palestinians who now call Jordan home have contributed significantly to new dialect formation of the capital city of Amman (see also Al-Wer 2007). Therefore, a difference between West Amman Arabic and East Amman Arabic can be drawn, due to the differences in terms of the demographic components of each sub-dialect of Amman. Furthermore, the differences between East Amman and West Amman are also linguistic. As a remark regarding the differences between East Amman and West Amman regarding the linguistic variation between them, Al-Wer (2007: 63) mentioned:

In East Amman, the youngsters spend considerably more time with their own families, and extended families often live in the same neighborhoods. On the other hand, in West Amman, the youngsters form intimate peer group relations, and spend most of their leisure time away from their homes and families [...] In other terms, the familial networks in East Amman are closer, and, therefore, linguistic innovations (divergence from the traditional dialects) would not be expected to permeate such tightly-knit social networks easily.

Stratifying the participants according to region (i.e., East Amman and West Amman) helps us evaluate whether or not the area of residence of Ammani speakers affects their pronunciation of the variable /ð/. West Amman is most commonly correlated with residents who belong to the middle and high class. Additionally, they are mostly well-educated. On the other hand, East Amman is commonly correlated with residents whose demographic background is Palestinian and who obtains lesser educational attainment in most cases. Table 1 displays the distribution of the sample according to sex, age, educational level and region.

It should be noted that the size of the sample is not very big. However, we believe that it is representative to the speech community. In fact, many previous studies relied on similar or even smaller samples (see Al-Shawashreh 2016; Alhawamdeh 2016).

3.1.2 Data Collection

Sociolinguistic interview (Labov 1984) is used to elicit spontaneous speech. The interview is divided into two parts, and only a portion of the sample is selected for the second part. Having extensive relationships in Amman enabled us to have access to many members of the speech community by using the ‘snowball technique’ or the friend-of-a-friend approach (Milroy and Milroy 1992). As reported by Voicu and Babonea (2011), the snowball sampling technique requires less planning than other sampling methods. This technique allows us to secure most of participants needed for the study. In order to meet more participants, we interview individuals

in different public places (e.g., malls, banks, cafes and supermarkets) where they are usually available for social interaction (see Labov 1984).

We briefly introduce ourselves as researchers who are doing a study on the community of West Amman and East Amman and illustrate that we need to interview AA speakers who were born and raised in Amman. Before embarking on recording interviews, consent was obtained from participants, following the standard conventions in this regard. In this study, the main challenge we encountered was resolving the observer's paradox. Many attempts are made to obtain the participants' least overtly careful speech style. For example, the interview situation in which we ask the questions to elicit personal narratives is employed (Labov 1972) allowing participants to converse in pairs on several topics of their own selection with minimal involvement from us (Docherty et al. 1997). Generally, participants' family members attending the audio-recorded interview help in explaining that everything is normal as well as it is okay to have the audio-recorded interview. For ensuring the flow of spontaneous and natural speech style during the interview, we do not reveal the linguistic nature of the current study as the main focus (Milroy and Gordon 2003). In addition, the interview questions are structured in a very careful way in order to increase the interviewee's speech naturally and decrease his/her attention to speech.

The interviews were recorded by using Techno Spark mobile phone. A voice recorder application is downloaded from Google play to record them (see Aldoum 2019). The first few minutes of every interview are devoted to break the ice with the participants. We mostly depend on previously arranged friends' visits. Most interviewees know in advance through a friend or over the telephone that the interview is going to be recorded. In addition, we inform the participants that interviews will be only used for academic purposes, and they will not be shared with other people. The questions of the interview cover general issues. We attempt to make the participants produce words containing the target variable by asking them about their opinions on some issues (e.g., the wedding customs, the importance of education for women, etc.) that have the variable /ð/ as a main sound. The interview starts with questions about personal details (e.g., age, education, marital status, profession and so on). A number of conversational networks or modules (Labov 1984) are used to ensure the flow of vernacular speech by focusing on the participants' different personal experiences throughout several stages of their lives (e.g., childhood, schooling, socializing, university, lifestyle, traditions, wedding customs, the importance of education and so on). The interview questions mainly depend on Abdel-Jawad's (1981) set of questions, but we modify some questions in order to make them suitable for asking in the current study. These are some of the questions that are used in the interviews:

1. Can you describe your school in detail?
2. What is the economic situation in Jordan?
3. Who was your favorite school/college teacher/professor?

The most crucial of all these topics is asking the participants to recall an emotional memory that happened to them or to people they know very well. The participants are told that the main reason behind asking this question is to see to what

extent an individual can remember the main details of an emotional event. This technique proved valid and effective to make the participants focus on remembering the essential details more than taking care of their speech (Al-Tamimi 2001). Generally, the questions are constructed to be as vernacular as possible to avoid any 'bookishness' of lexicon and syntax (Milroy and Gordon 2003), to minimize the degree of formality during the audio-recorded interviews and to increase the chance of obtaining the vernacular speech style. Furthermore, we attempt to be good listeners so that the participant is the person who talks most of the time, elaborating on different topics and issues of interest to him/her (Milroy 1978). This also helps us make sure that the linguistic impact of the interviewer's linguistic background on the interviewees' choices is kept to a minimum during the interview.

Triangulation is a beneficial method used to increase the validity and credibility of research results (Cohen et al. 2017). It generally offers clarity and richness to research studies (Heale and Forbes 2013). Methodological triangulation promotes the use of multiple data collection methods like observations and interviews (Noble and Heale 2019). The second part of the interview is conducted after analyzing the data of the study. Twenty participants are randomly chosen and interviewed again to ask them about their personal opinions in the results. They are asked to mention the possible reasons that lead to such findings. These are some of the questions that are used in the interviews:

- i. What is the most used variant in Ammani Arabic?
- ii. What are the most used variants by Ammani males? Why?
- iii. What are the most used variants by Ammani females? Why?
- iv. Do Ammani females avoid the use of specific variants in their speech? Why?

3.2 Data Analysis

The interview is designed to elicit elaborated responses on the research questions. All tokens including the /ð/ variable where [ð] is variant are directly extracted from the audio-recorded interviews. We exclude all tokens where /ð/ is invariant. The total number of eligible tokens is 1100. These tokens are carefully transcribed in an Excel spreadsheet showing the distribution of the collected data. A meticulous transcription protocol is followed to transcribe the data. Moreover, the characteristics of vernacular AA (e.g., syntactic structures and lexical choices) are taken into consideration. In the spreadsheet, all tokens are coded for the aforementioned sociolinguistic factors which are hypothesized to determine the variant choice. After completing the process of coding, the data are carefully checked in order to get very accurate results. The coding string that linked with each token is concatenated. Then, the coding strings and tokens are precisely inserted into a token file. This file is a flat-text file used for statistical evaluation and distributional analysis. Specifically, GOLD-VARB X is used. Finally, the results are interpreted and analyzed by comparing them with the wider existing literature and the patterns revealed in related studies.

A detailed analysis of the data is introduced in the next section.

Table 2 Overall distribution of [ð], [d], [z] and [ð^s] in AA

Variant	Percentage (%)	Number (N)
[ð]	43.5	479
[d]	27.9	307
[z]	23.5	259
[ð ^s]	5.0	55
Total		1100

4 Results

4.1 Overall Distributional Analysis

A total of 1100 tokens are extracted from the interviews. The findings in Table 2 show that the distribution of the [ð] variant (43.5%) is higher than that of [d], [z] and [ð^s] (27.9%, 23.5% and 5.0%, respectively). This section answers the first research question that is raised in Sect. (2.2). The table clearly shows that the variant [ð] is the most used one in AA.

4.2 Multivariate Analysis

Poplack and Tagliamonte (2001) point out that multivariate analysis provides the researchers with three key lines of evidence. First, it helps the analysts recognize the statistical significance of a set of factor groups when all factors are simultaneously run (i.e., in the same run). Therefore, multivariate analysis is considered different from the distributional analysis where each factor is separately run. Second, it presents the relative strength of effects. It is important to notice that the magnitude of effect is expressed by the range value which shows the strength of the factor group in comparison with the other factor groups.¹ Finally, it presents the analysts with the constraint hierarchy within each factor group. The constraint hierarchy clearly views whether the factor group favors (0.50 or more) or disfavors (less than 0.50) the choice of the variant.

In this article, providing a multivariate analysis of the linguistic factors is considered difficult due to the number of subcategories of these factors. Unfortunately, a number of factors result in many knockouts.² Therefore, it is necessary to solve these categorical knockouts before running the process of multivariate analysis. As a result, some of the factor groups are re-coded to eliminate the number of constraints

¹ Range value is calculated by getting the difference between the highest and lowest weights of the constraints within each statistically significant factor group.

² A knockout means that one of the variants occurs with frequency 0% or 100. Thus, variable rule analysis cannot logically be applied in the presence of such knockouts. To get rid of knockouts, one should use the 're-code tokens' option in GoldVarb X in order to decrease the number of the subcategories within the factor group (for more details, see <https://albuquerque.bioinformatics.uottawa.ca/GoldVarb/GoldManual.dir/GVManual.html>).

within each factor group. This facilitates the process of applying the multivariate analysis. As for the syntactic category of the word, the constraints are collapsed as follow: conjunctions (that include *ʔiðā* or *ʔið* ‘if’) and demonstratives (i.e., *ha:ðā* ‘this. M’haði:k ‘that. F’) are integrated as one group called functional words. In addition, nouns and verbs are integrated as another new group called lexical words. However, the different positions of the variant [ð] in the word are kept as separate groups. Consider Table 3:

The results of the multivariate analysis of the social and linguistic factors to the probability that [ð] variant will be selected to show that the social (speaker’s sex, age, region, level of education) and linguistic (the position of [ð] in the word and the syntactic category of the word) factors are statistically significant in conditioning the variant choice. Based on the magnitude of effect, represented by the range value, the findings show that speaker’s sex is the strongest factor group that conditions the variant choice (55) followed by the position of [ð] in the word (42), the level of education (30), region (28), syntactic category of the word (25), and age (17). As displayed in the results shown in Table 3, male speakers favor [ð], while female speakers disfavor it. In addition, highly educated and middle-level educated speakers favor [ð], whereas low-level educated speakers disfavor it. Moreover, speakers in East Amman favor [ð], while speakers in West Amman disfavor it. The results above suggest that there is a possible change in progress in that young speakers, unlike middle-aged and old speakers, disfavor [ð] variant, and its expansion is clearly displayed through the differences among age groups. However, young speakers highly favor/use the urban variants (i.e., [d] and [z]). Al-Wer (1999) also finds that Jordanian women tend to use stop variants (i.e., [d] and [t]) in their speech. The multivariate results reveal that [ð] is favored in lexical words (e.g., *haða*), especially in middle position.

5 Discussion

5.1 The Effect of the Linguistic Factors on the Variant Choice

Regarding the research question concerning the linguistic factors that condition variant choice, the results show that the variant choice of the variable /ð/ is linguistically conditioned by some factors, namely the position of /ð/ in the word as well as the syntactic category of the word. The multivariate analysis shows that [ð] is favored in medial position and disfavored in initial and final positions. The analysis also indicates that [ð] is favored in lexical words and disfavored in functional words of the collected data in the current study.

The distributional results reveal that there is an increase in the frequency of [ð] in initial and middle positions more than in final position. In AA, it is worth pointing out that the use of /ð/ is considered lexically restricted and determined in some words, especially if they are borrowed from CA and employed in colloquial language. For example, the variable /ð/ is usually pronounced as [ð] in the word ‘ðuku:ri’(masculine) in AA. In this word, /ð/ is rarely pronounced as [z] (e.g., *zuku:ri*), whereas it cannot be pronounced as [d] (e.g., *duku:ri*) or [ð^s] (e.g., *ð^suku:ri*) in AA. The results also show that [d] variant highly occurs in final position

Table 3 Variable rule analysis of the contribution of social and linguistic factors to the possibility that the variant [ð] will be selected

Corrected mean ^a			0.401
Log likelihood ^b			-545.59
Significance(p < 0.05)			0.001
Total number			479/1100
Speaker's sex	Factor weight ^c	%	N
Male	0.77	66	370/564
Female	0.22	20	109/536
Range	55		
Position of ð			
Middle	0.55	43	332/776
Initial	0.46	51	138/270
Final	0.13	17	Sep-54
Range	42		
Level of education			
High	0.64	54	172/320
Middle	0.55	46	181/393
Low	0.34	33	126/387
Range	30		
Region			
East	0.64	53	293/553
West	0.36	34	186/547
Range	28		
Syntactic category of the word			
Lexical words	0.62	48	273/572
Functional words	0.37	39	206/528
Range	25		
Speaker's age			
Old	0.57	50	167/335
Middle-aged	0.53	47	186/399
Young	0.4	34	126/366
Range	17		

^aCorrected mean or input is "an overall measure of rule application" (Tagliamonte 2006, 264)

^bLog likelihood is a "measure of the goodness of fit of an analysis; figures closer to zero represent better models than those further removed from zero" (Tagliamonte 2006, p. 265)

^cFactor weight refers to "values assigned by the variable rule program indicating the probability of rule application" (Tagliamonte 2006, 264)

more than in middle or initial positions, while [z] variant is highly frequent in initial and middle positions more than in final position. In the case of the emphatic variable [ð^ɛ], it occurs in middle position more than in final position. In the current study, the variable /ð/ is not pronounced as [ð^ɛ] in initial position (e.g., ð^ɛahab 'gold').

With regard to the syntactic category of the word, the distributional results show that [ð] variant is highly frequent in conjunctions. It also occurs in nouns more than

in verbs or demonstratives. It is also found that [d] variant is highly used in demonstratives more than in verbs or nouns. In this article, the participants do not pronounce the variable /ð/ as [d] in conjunctions. However, [z] variant is highly frequent in conjunctions more than in verbs or nouns. It is noticed that the participants do not use [z] variant in demonstratives. Finally, the participants only use [ð^s] variant in demonstratives.

5.2 The Effects of Social Factors in Determining the Variant Choice

Regarding the research question concerning the social factors that affect the variant choice in AA, the multivariate analysis shows that speaker's sex, age, region and level of education are statistically significant. In other words, the variant choice of the linguistic variable /ð/ is found to be socially conditioned by these factors. According to the magnitude of effect, provided by the range value of each factor group, the speaker's sex is found to be the strongest social factor that conditions the variant choice of [ð] variant (55) followed by the level of education (30), region (28) and age (17) (see Table 3).

The results of the multivariate analysis of [ð] variant indicate that young speakers use the [ð] variant less than middle-aged and old speakers. Rather, they highly use the urban variants (i.e., [d] and [z]). The following is a quotation by an old-educated man from East Amman: "In Amman, the majority of old people still speak the dialects of their ancestors (such as [ð] and [ð^s] sounds) while young people usually use the urban dialect (more (such as [d] and [z] sounds)". A middle-aged uneducated man from West Amman stated the following: "You know that the new generations of Ammani people are born and raised in the city of Amman, so they feel that urban dialect is a part of their identity."

Consider Example (1):

- (1) ʔil-ðahab ktiir muhim
 The-gold very important
 'The gold is very important'

Such results are in line with the findings of several previous studies that addressed the role of sex on language variation in Arabic (Abdel-Jawad 1981, 1987; among others). For example, Abdel-Jawad (1981, 1987) finds that younger females lead the /q/ sound change by using the variant /ʔ/ and adopting it in the speech community of Amman.

The results of the multivariate analysis of [ð] variant in terms of sex factor show that Ammani male speakers favor [ð] in their speech, while female speakers disfavor it. However, female speakers use urban prestigious variants ([d] and [z]) more than male speakers. An old-educated man from East Amman stated that: "I think that your results make sense. From my point of view, masculinity requires a rough way of speaking (such as [ð^s] and [ð^s] sounds) while women generally tend to be elegant and soft, so they use more urban sounds (such as [d] and [z]) in their speech. A young, educated man from East Amman believed that: "most girls, even if their

parents do not speak the urban dialect, speak it as an indicator of femininity in Amman". In my personal opinion as a researcher, we do not inherently have masculine, rough, feminine, soft or elegant in any particular variant. However, these are just stereotypical qualifications in the Ammani community.

Men and women's linguistic choices are not arbitrary, but they are normally constrained by social expectations and sex motivations (Al-Ali and Arafa 2010). We cross-tabulate the social factors (e.g., sex and age and education and age) in order to obtain very detailed patterns on the way in which these social factors affect the distributions of the variants and to ensure that there are no interactions between the social factors. Tagliamonte (2006, p.182) affirms that the process of cross-tabulation allows us to "ensure that you know your data inside out; it also permits you see exactly how the data is distributed for each intersection of factors. In the process you may observe interactions, badly distributed cells, empty cells and even coding errors (which can then be corrected in token file)". A cross-tabulation of age and sex shows that young, middle-aged and old males use [ð] more than their female counterparts who in turn use [d] and [z] more than male speakers in all age groups. In addition, cross-tabulations show that the variant [ð^ɕ] has not been used by any female speaker. This indicates that [ð^ɕ] is associated more with men in Amman.

As for the level of education, the results of the multivariate analysis of [ð] show that education is statistically significant. Highly educated speakers are found to highly favor [ð] variant in their speech, followed by middle-educated speakers. Yet, low-educated speakers are found to disfavor it.³ These results are supported by many participants who indicated that educated men and women subconsciously use eloquent words which should be said in MSA. Therefore, they normally use [ð] sound more. In addition, an old uneducated woman from East Amman stated that: "I think that educated people use [ð] sound as an indicative of the level of education. You know that educational prestige is important in our society and Jordanians generally respect educated people more." These results are in agreement with many of the ones reported in previous studies.

The effect of the speaker's level of education on variant choice can be explained referring to different viewpoints. For example, it is believed that education by itself does not affect variant choice; rather it is a proxy variable that provides a better opportunity of mobility and communication for speakers. Educated speakers usually travel to cities that have educational institutions. As a result, they communicate and interact with individuals from the city and from other cities. Therefore, they become influenced by others' linguistic variants or norms (Al-Wer et al. 2011). Al-Wer (1997) affirms that education does not lead to an increase in the use of Classical Arabic (CA) characteristics by educated speakers. However, the current study

³ A cross-tabulation of age & education shows that young speakers with low education use [d] and [z] more than [ð] and [ð^ɕ]. In addition, young speakers with low education (25%) use [ð] less than middle-aged (30%) and old (45%) speakers with low education. That is to say, the older the speaker is, the higher the percentage of [ð]. In addition, old highly educated speakers frequently use [ð] (73%) in their speech more than middle-aged highly educated (54%) and young highly educated (34%) speakers. Moreover, it is important to note that no example in the data is found where (ð) is pronounced as [ð^ɕ] in case of old highly educated speakers and middle-aged highly educated speakers. It is found that young low-educated speakers (9%) use [ð^ɕ] more than young middle-educated (7%) and young highly educated (4%) speakers.

reveals that due to educational prestige Ammani educated speakers increasingly use [ð] at the expense of other variants of the linguistic variable (ð) in AA. Sawiński (1986) affirms that educational prestige can be viewed as the esteem or respect shown to people who have a type or level of education.

Although educational prestige is considered so significant for Ammani females, they are very associated with prestigious urban variants (e.g., [d] and [z]). More importantly, these are often variants found in other large cities in the region, e.g., Damascus, Beirut and Jerusalem, which have been centers of cultural activity for centuries. In Jordan, the urban variety (Madani) has a high prestigious status which derives from the common belief that it is cultured, more refined and socially speaking (Suleiman 1993). These results are in line with Miller (2007) who find that Arab female speakers use MSA variants less than males. Miller (2007) find that Arab females highly prefer to use prestigious urban variants. Abdel-Jawad (1986) concludes that urban variants and MSA are considered two competing forms of prestige. Abdel-Jawad explains that MSA is more restricted to public and formal contexts where females are less often present.⁴

Turning to the effect of region on determining variant choice, the results of the multivariate analysis of [ð] variant show that speakers in East Amman favor [ð] variant, while speakers in West Amman disfavor it. West Amman is a relatively advanced and developed area, while East Amman is considered a poverty-stricken place as well as it still has an older and more traditional lifestyle (Fadda 2019). A middle-aged uneducated man from West Amman said that “Important government buildings are confined to the areas of West Amman (such as Dabouq and Abdoun). Therefore, these areas attract rich people who are looking for prestige. It is well known that the Madani dialect is associated with cities, and West Amman is the heart of Amman. I think that people in West Amman speak Madani to show prestige and luxurious urban life”. Nasser-Eddin (2011) notices that the majority of rural migrants live in poor areas in East Amman. Some AA speakers, especially males from East Amman, are found to prefer using non-urban variants (e.g., [ð] variant) which are considered linguistic features of their local varieties. Linguistically, it is considered true that their attitude is very strong toward their varieties, and they consider them very close to the standard language (Almhairat 2015). Nasser-Eddin (2011) believes that the differences between the two regions of Amman are not only economic, but there are also many noticeable linguistic and cultural differences. According to the findings of the current study, the speakers in West Amman are found to favor [d] and [z] as

⁴ Another cross-tabulation of education & sex shows that highly educated males use [ð] (86%) more than middle-educated (63%) and low-educated (52%) males, respectively. However, the higher the level of education is, the less the percentage of [d], [z] and [ð¹] in the speech of males in Amman. As for females, the results demonstrate that highly educated (22%) and middle-educated (29%) females use [ð] more than low-educated females (10%). Furthermore, [d] and [z] are highly frequent in the speech of females regardless of their level of education. Moreover, [d] and [z] are used by highly educated females more than highly educated males. These results are in line with Schmidt (1986) who assumes that a prestigious variety in a certain place is highly recognized by educated women more than educated men. Several studies in Western speech communities (e.g., Labov 1966; Levine & Crockett, 1966; Trudgill, 1997; among others) have shown that females’ speech is considered closer to a standard variety, while other studies in some Arabic speech communities (e.g., Abdel-Jawad 1981; Royal, 1985; among others) have found that males’ speech is more closely related to the standard variety.

urban variants more than those in East Amman. According to Swaie (1984), urban speakers assume that they are often considered culturally superior to people who speak other varieties. Therefore, some AA speakers believe that speakers from West Amman are economically, socially and linguistically superior to speakers from East Amman. A young-educated woman from East Amman stated that: “Some girls feel that it is more prestigious to use [d] and [z] sounds in certain regions such as West Amman. I think that the surrounding environment affects the way in which some sounds are pronounced, and you may change the way of speaking depending on the region and the situation”. To provide a closer inspection of such linguistically based attitudes/beliefs, we cross-tabulate the factor of region with the other social factors (age, sex and education) in order to see whether or not the distributional patterns of the variants are affected by such more fine-grained cross-tabulations.

5.3 Cross-Tabulations of Region and the Other Social Factors

5.3.1 Cross-Tabulation of Region and Sex

The cross-tabulation of region and sex reveals that males in West (53%) and East (78%) Amman use [ð] more than females in West (13%) and East (27%) Amman. Similarly, male speakers in East Amman use [ð^s] more than males in West Amman, while it is completely absent in the speech of females in East and West Amman. This means that [ð^s] is associated with males (masculinity) and its absence is associated with females (femininity). It is also clear that [d] and [z] variants are more frequent in the speech of females in East and West Amman than in the speech of their male counterparts. In addition, the cross-tabulation shows that males and females in East Amman use [ð] more than their male and female counterparts in West Amman who in turn use [d] and [z] more than males and females in East Amman. This being the case, these findings show that males (particularly in East Amman) use [ð] and [ð^s] in their speech more than females (particularly in West Amman) who highly use [d] and [z] and do not use [ð^s] at all (Table 4).

5.3.2 Cross-Tabulation of Region and Age

The cross-tabulation of speaker's age and region reveals that [ð] is more frequent in the speech of East Amman speakers than in the speech of their West Amman counterparts. This pattern applies to all age groups. The cross-tabulation also shows that [d] and [z] are used more by West than East Amman speakers in all age groups. Young speakers in West Amman have the highest percentages of using [d] and [z], while old speakers in East Amman have the lowest percentages of using these two variants. Furthermore, it is found that [ð^s] is rarely used by speakers in West Amman (particularly by old speakers). It can also be noticed that the older the speaker is, the higher the percentage of using [ð] in East Amman (Table 5).

Table 4 Distribution of [ð], [d], [z] and [ð^s] in AA in terms of the cross-tabulation of sex and region

Sex	Male		Female		Total	
Region	% N		% N		% N	
West						
[ð]	53	151	13	35	34	186
[d]	26	74	46	121	36	195
[z]	15	44	40	106	27	150
[ð ^s]	6	16	0	0	3	16
Σ		285		262		547
East						
[ð]	78	219	27	74	53	293
[d]	1	4	39	108	20	112
[z]	6	17	34	92	20	109
[ð ^s]	14	39	0	0	7	39
Σ		279		274		553
Total						
[ð]	66	370	20	109	44	479
[d]	14	78	43	229	28	307
[z]	11	61	37	198	24	259
[ð ^s]	10	55	0	0	5	55
Σ		564		536		1100

5.3.3 Cross-Tabulation of Region and Education

The cross-tabulation of region and level of education shows that all speakers in West Amman use [d] and [z] more than their counterparts in East Amman regardless of their level of education. This pattern is reversed in the case of [ð] and [ð^s] where speakers in East Amman use these two variants more than their counterparts in West Amman. The results also show that [ð] is clearly used more than the other variants by middle-educated speakers in East Amman, highly educated speakers in East Amman, highly educated speakers in West Amman and finally, low-educated speakers in East Amman. Some speakers in Eastern Amman consider the variant [ð] as a local variant to which they are loyal. The results further indicate that the higher the level of education is, the lower the percentage of [ð^s] in the speech of all speakers in East and West Amman; it is actually non-existent in the speech of highly educated speakers in West Amman and almost non-existent in the speech of highly educated speakers in East Amman. This could mean that highly educated speakers in West and East Amman use [ð] instead of [ð^s] to distinguish their speech from low-educated speakers. The absence of [ð^s] in this case shows that the speaker is highly educated (Table 6).

Based on the results of the cross-tabulations of region with the other social factors (age, sex and education), it is clear that [ð] and [ð^s] are more frequent in the speech of East Amman speakers, while [d] and [z] are more frequent in the speech of

Table 5 Distribution of [ð], [d], [z] and [ð^ɕ] in AA in terms of the cross-tabulation of speaker's age and region

Age	Young		Middle-aged		Old		Total	
Region	% N		% N		% N		% N	
West								
[ð]	23	41	42	86	36	59	34	186
[d]	42	73	32	67	33	55	36	195
[z]	31	55	22	45	30	50	27	150
[ð ^ɕ]	3	6	4	9	1	1	3	16
Σ		175		207		165		547
East								
[ð]	45	85	52	100	64	108	53	293
[d]	21	40	27	52	12	20	20	112
[z]	25	47	18	35	16	27	20	109
[ð ^ɕ]	10	19	3	5	9	15	7	39
Σ		191		192		170		553
Total								
[ð]	34	126	47	186	50	167	44	479
[d]	31	113	30	119	22	75	28	307
[z]	28	102	20	80	23	77	24	259
[ð ^ɕ]	7	25	4	14	5	16	5	55
Σ		366		399		335		1100

West Amman speakers. Also, females and highly educated speakers in West Amman do not use [ð^ɕ]. Furthermore, West Amman young females have the highest percentages of using [d] and [z], while East Amman old males have the highest percentages of using [ð] and [ð^ɕ]. Therefore, we can propose that these two groups linguistically behave in two different directions with the former leading toward more [d] and [z] in West Amman and the latter leading toward more [ð] and [ð^ɕ] in East Amman.

5.4 Indexicality and the Social Meaning of the Four Variants of /ð/

Regarding the notion of the possible social meaning which the linguistic variable /ð/ carries, it is noticed that the repeated use of the four variants ([ð], [d], [z] and [ð^ɕ]) in various self-presentational styles linked with social groupings causes these variants to be semiotically connected with specific ways of acting and being in the speech community of Amman. The results show that the different variants of the variable /ð/ are considered as social, linguistic, gendered and age-related symbols in Amman. In other words, the frequency of the four variants in AA is associated with whether the participant is from East Amman or West Amman, educated or uneducated, young or old and a male or a female.

Table 6 Distribution of [ð], [d], [z] and [ð^ɕ] in AA in terms of the cross-tabulation of speaker's level of education and region

Region	West		East		Total	
Education	% N		% N		% N	
Low						
[ð]	26	50	39	76	33	126
[d]	42	81	26	50	34	131
[z]	29	56	24	46	26	102
[ð ^ɕ]	4	7	11	21	7	28
Σ		194		193		387
Middle						
[ð]	31	62	62	119	46	181
[d]	35	71	17	33	26	104
[z]	30	60	13	25	22	85
[ð ^ɕ]	4	9	7	14	6	23
Σ		202		191		393
High						
[ð]	49	74	58	98	54	172
[d]	28	43	17	29	22	72
[z]	23	34	22	38	22	72
[ð ^ɕ]	0	0	2	4	1	4
Σ		151		169		320
Total						
[ð]	34	186	53	293	44	479
[d]	36	195	20	112	28	307
[z]	27	150	20	109	24	259
[ð ^ɕ]	3	16	7	39	5	55
Σ		547		553		1100

In this study, the distributional results show that [ð] variant is used by Ammani males (65.6%) more than Ammani females (20.3%) who in turn highly use [d] (42.7%) and [z] (36.9%). Moreover, it is found that highly educated speakers (53.8%) and middle-educated speakers (46.1%) use [ð] as a standard variant more than low-educated speakers (32.6%). Regarding the speaker's region, it is found that speakers in East Amman use [ð] (53%) more than speakers in West Amman (34%) who in turn frequently use [d] (35.6%) which is a prestigious and classy variant. Furthermore, old speakers (49.9%) and middle-aged speakers (46.6%) use [ð] more than young speakers (34.4%). Finally, it is interesting to notice that [ð^ɕ] variant is only used by male participants.

Based on these results, it is clear that the use of [ð] variant highly takes place in the speech of males in East Amman, who are educated (middle or highly educated speakers) and/or are middle-aged/old. This suggests that this variant is considered a first-order index (Silverstein 2003) or indicator (Labov 1972) of an individual's

being from East Amman male, who is educated and/or middle-aged/old. It is worth pointing out that [ð], as a standard variant in MSA, is frequent in the speech of educated speakers of both East Amman and West Amman. In addition, AA as a dialect has sub-varieties, and [ð] is one of the most distinguishing features of some varieties which appear in Eastern Amman rather than in Western Amman.

The results reveal that [d], as a prestigious urban variant, is frequent in the speech of individuals from West Amman, and it is more likely to be used in the speech of females who were born and raised in West Amman regardless of their age. Therefore, [d] is considered a first-order index of females who are from Western Amman. Interestingly, it is found that low-educated females tend to use urban variants such as [d] variant in their speech to sound more prestigious. It is also found that middle-educated and highly educated speakers (particularly males) usually use the standard variant [ð] in their speech to get the educational prestige which Sawiński (1986) defines as the esteem or respect shown to people who have a type or level of education. In the case of [z], the results reveal that it is frequent in the speech of individuals (particularly females) from West Amman, and it is more likely to be used by young speakers regardless of their level of education. Therefore, this variant is a first-order index of females being from West Amman and/or young. Finally, it is found that [ð^ʕ] variant largely occurs in the speech of young, males, residents of East Amman, who are low-educated and/or have a low socio-economic status. Although young speakers use [ð^ʕ] more than middle-aged and old speakers, it is the least frequent variant in the speech of young speakers. At first-order indexicality, the linguistic variables are considered as non-salient variables. It is crucial to mention here that first-order indexicality does not display a stylistic variation.

Since the connection between the linguistic form and a specific social meaning only starts to become meaningful when a person clearly recognizes it, first-order indexicality is only a possibility (Silverstein 2003). The results assume that /ð/ is a first-order index of someone's being from that East Amman, educated, old and/or male. Second-order indexicality or what Labov (1972) refers to as a marker happens when people begin to use first-order correlations in order to do social work either performative or interpretive (Johnstone 2007). At the marker stage, Ammani speakers are found to be aware of the different variants of the variable /ð/, so these variants are *salient* at this stage. For example, since [ð^ʕ] variant is used in such a way, a person who recognizes this distribution can hear [ð^ʕ] as indicating that the speaker is more likely to be from East Amman, male, young, not educated and/or has a low socio-economic status. Therefore, people who can variably use this variant may use it less if they are attempting to sound educated and prestigious, or more if they are trying to project a local identity and sound more like East Ammani speakers. At the marker stage, the use of a certain variant or another of the variable /ð/ is found to be socially meaningful in Amman. It can be concluded that first-order correlations clearly shape second indexical order.

Awareness and understanding of the social meanings of the four variants of the linguistic variable /ð/ do not arise suddenly. The realization of the social meanings

has been developing and building up for several years, but it is acted on when the different patterns of variation begin to carry social meanings and Ammani speakers are consequently evaluated. In this regard, Eckert (2000, p.5) states that:

While adolescence patterns of variation begin to fall into the kinds of global patterns found in the adult population, I would argue that this does not signal a sudden awareness of the social functions of variation, but the adaptation of an already robust sociolinguistic competence to a new set of social meanings.

Zhang (2008) emphasizes that the study of variation must mainly focus on stylistic practice. In the current study, it is noticed that the use of the linguistic variable /ð/ could be constrained by the context of use and by the variables that are investigated. For example, Ammani speakers are found to use [ð] in certain contexts (e.g., academic and religious situations) at different rates based on their sex, age, region and educational level. Based on Silverstein's (2003) model of indexical order, each variant of the linguistic variable /ð/ is considered a feature that simply marks a person as an Ammani speaker and that comes to be used stylistically to index a particular type of Ammani speakers and making salient some aspects of identity.

According to Eckert (2000), viewing individuals in terms of the various communities of practice (CoPs) in which they are members reveals the complexity and fluidity of social participation and identity. Eckert points out that while every person can participate in multiple CoPs, there is nothing arbitrary about this multiplicity. In this study, it is found that Ammani speakers use different variants as they participate in different CoPs. For instance, Ammani females may change their variant choice of the linguistic variable /ð/ because they are feminists, lovers, mothers, grandmothers or professors. The feminine ideology sometimes suggests that women must behave in a "feminine" manner and use certain soft words. Tolman et al. (2006) explain that feminine ideology can be defined as a socially constructed ideology in which the culture supports specific ways in which a female must behave to be seen as "feminine." The researcher notices that Ammani females tend to use [z] and [d] variants to be more feminine in certain situations. In addition, Ammani males may modify their linguistic choices as they are policemen, bus drivers, tutors, lovers or physicists. It is found that Ammani men largely try to signify the masculine and local ideologies through the use of [ð] and [ð^h]. The structures and divisions of language should transparently fit the structures and divisions of the "real world" (Silverstein 1979).

In general, $n+1$ -th order indexicality (i.e., second-order indexicality) happens when n -th-order indexical relations (i.e., first-order indexicality) can be obviously noticed by speakers, have social meaning and become usable pragmatically. Johnstone et al. (2006) state that a third order of indexicality (i.e., $n+1+1$) occurs when a variant reflects a certain ideology and is employed in self-conscious or intentional performances of a speaker's knowledge about the characteristics that stereotypically establish a specific variety. That is to say, in third-order indexicality, the social meaning of a linguistic variant becomes increasingly and strongly linked to a certain

place although they can be seen as indicators (e.g., an indicator of masculinity vs. femininity in the context of local identity). For instance, anyone who uses [ð^s] is most likely a young male from East Amman with low education.

In the current study, the Ammani speakers are found to use regional variants (e.g., ð^s in East Amman) sometimes in semi-serious or ironic ways. When Ammani speakers, for example, say the following phrase in (2), they perform a local identity (i.e., being from Eastern Amman) by using the variant [ð^s] (VOC = Vocative).

- (2) fu hað^sa j3 zalameh
 what this voc Man
 ‘What’s going on?’

The variant [ð^s] in Amman reflects a local identity associated with East Amman. The results of this study show the degree to which the different indexical meanings of the phoneme /ð/ can vary within the speech community of Amman. In addition, it is found that Ammani speakers are aware of the four linguistic variants of the variable /ð/, so they are considered *salient* variants and can be regarded as *stereotypes* at this stage.

6 Conclusion

This study has investigated the phonological variation that takes place in the natural uncontrolled daily speech of Ammani speakers. The variable /ð/ and its phonological variants are carefully chosen due to reflecting meaningful social variation in AA. The correlations between the linguistic variable /ð/ and a set of social (sex, age, region and education) and linguistic (the position of /ð/ in the word and the syntactic category of the word) factors are investigated within the framework suggested in Silverstein’s (2003) model of indexicality. The multivariate results reveal that the variants of the linguistic variable /ð/ are found to be used pragmatically and carry social meanings that almost indicate the speaker’s region (East Amman or West Amman); age (young, middle-aged, old); sex (male, female) and level of education (low, middle, and high). In addition, the position of /ð/ in the word and the syntactic category of the word are found to be statistically significant in favoring the choice of /ð/. Therefore, /ð/ variant is considered a linguistic, social, educational, age-related and gendered symbol in AA. This study displays the significance of the linguistic variable /ð/ as an important criterion of sociolinguistic stratification in Amman.

Appendix

See Tables 7, 8, 9

Table 7 Distribution of [ð], [d], [z] and [ð^ɛ] in AA in terms of the cross-tabulation of speaker's sex and age

Age	Young adult		Middle-aged adult		Old adult		Total	
Sex	% N		% N		% N		% N	
Male								
[ð]	53	92	74	159	68	119	66	370
[d]	20	35	9	19	14	24	14	78
[z]	13	22	11	23	9	16	11	61
[ð ^ɛ]	14	25	7	14	9	16	10	55
Σ		174		215		175		564
Female								
[ð]	18	34	15	27	30	48	20	109
[d]	41	78	54	100	32	51	43	229
[z]	42	80	31	57	38	61	37	198
[ð ^ɛ]	0	0	0	0	0	0	0	0
Σ		192		184		160		536
Total								
[ð]	34	126	47	186	50	167	44	479
[d]	31	113	30	119	22	75	28	307
[z]	28	102	20	80	23	77	24	259
[ð ^ɛ]	7	25	4	14	5	16	5	55
Σ		366		399		335		1100

Table 8 Distribution of [ð], [d], [z] and [ð^h] in AA in terms of the cross-tabulation of speaker's level of education and age

Age	Young		Middle-aged		Old		Total	
Education	% N		%N		%N		% N	
Low								
[ð]	25	34	30	40	45	52	33	126
[d]	35	47	43	58	22	26	34	131
[z]	32	43	24	33	22	26	26	102
[ð ^h]	9	12	3	4	10	12	7	28
Σ		136		135		116		387
Middle								
[ð]	45	57	56	85	34	39	46	181
[d]	30	38	22	33	29	33	26	104
[z]	18	23	15	23	34	39	22	85
[ð ^h]	7	9	7	10	3	4	6	23
Σ		127		151		115		393
High								
[ð]	34	35	54	61	73	76	54	172
[d]	27	28	25	28	15	16	22	72
[z]	35	36	21	24	12	12	22	72
[ð ^h]	4	4	0	0	0	0	1	4
Σ		103		113		104		320
Total								
[ð]	34	126	47	186	50	167	44	479
[d]	31	113	30	119	22	75	28	307
[z]	28	102	20	80	23	77	24	259
[ð ^h]	7	25	4	14	5	16	5	55
Σ		366		399		335		1100

Table 9 Distribution of [ð], [d], [z] and [ð^ɛ] in AA in terms of the cross-tabulation of speaker's sex and education

Sex	Male		Female		Total	
	%N		% N		% N	
Low education						
[ð]	52	108	10	18	33	126
[d]	19	39	51	92	34	131
[z]	15	31	39	71	26	102
[ð ^ɛ]	14	2	0	0	7	28
Σ		206		181		387
Middle education						
[ð]	63	125	29	56	46	181
[d]	14	27	39	77	26	104
[z]	12	23	32	62	22	85
[ð ^ɛ]	12	23	0	0	6	23
Σ		198		195		393
High education						
[ð]	86	137	22	35	54	172
[d]	8	12	38	60	22	72
[z]	4	7	41	65	22	72
[ð ^ɛ]	2	4	0	0	1	4
Σ		160		160		320
Total						
[ð]	66	370	20	109	44	479
[d]	14	78	43	229	28	307
[z]	11	61	37	198	24	259
[ð ^ɛ]	10	55	0	0	5	55
Σ		564		536		1100

Acknowledgements The authors wish to thank the three anonymous reviewers and the editor-in-chief for their useful comments on an earlier draft of the paper.

Author Contributions ARA and RA contributed to the study conception and design. Data collection was performed by RA. All authors contributed to data analysis and interpretation. The first draft of the manuscript was written by RA and ARA. Proofreading and copy-editing were performed by MJ, ARA and RA. All authors commented on previous versions of the manuscript, and all authors read and approved the final version of the manuscript.

Funding This research received no funding.

Data availability The data and code that support the findings of this study may be available from the authors upon reasonable request.

Code availability The authors confirm that the data supporting the findings of this study are available upon reasonable request.

Declarations

Conflict of interest No potential conflict of interest was reported by the author(s).

References

- Ababsa, M. 2011. Social Disparities and Public Policies in Amman. *Presses de l'Institut français du Proche-Orient*, pp.205–232, 2011.
- Abdel-Jawad, H. 1986. The Emergence of an Urban Dialect in the Jordanian Urban Centers. *International Journal of the Sociology of Language*. <https://doi.org/10.1515/ijsl.1986.61.53>.
- Abdel-Jawad, H. 1987. Cross-dialectal Variation in Arabic: Competing Prestigious Forms. *Language in Society* 16 (3): 359–367. <https://doi.org/10.1017/s0047404500012446>.
- Abdel-Jawad, H. 1981. Lexical and Phonological Variation in Spoken Arabic in Amman. Doctoral Dissertation, University of Pennsylvania, USA.
- Al-Khatib, M. 1988. Sociolinguistic Change in an Expanding Urban Context: A Case Study of Irbid City, Jordan. Doctoral Dissertation, University of Durham, UK.
- Al-Wer, E. 1991. Phonological Variation in the Speech of Women from Three Urban Areas in Jordan. Doctoral Dissertation, University of Essex, UK.
- Al Omari, M., W. Zuraiq, B. Mashaqba, S.S. Alahboul, and al Huneety, A. I. 2022. Jordanian Women Are “Sort of Like” Less Assertive Than Jordanian Men, Aren’t They? *The International Journal of Communication and Linguistic Studies* 20 (1): 83–105. <https://doi.org/10.18848/2327-7882/CGP/v20i01/83-105>.
- Al Wer, E. 2013. Education as a speaker variable. In *Language contact and language conflict in Arabic*, ed. A. Rouchdy, 59–71. Routledge.
- Al-Ali, M., and H. Arafa. 2010. An Experimental Sociolinguistic Study of Language Variation in Jordanian Arabic. *The Buckingham Journal of Language and Linguistics* 3: 220–243. <https://doi.org/10.5750/bjll.v3i0.30>.
- Aldoum, F. (2019). Linguistic Variation in Ghouri Jordanian Arabic. Master’s thesis, Yarmouk University, Jordan.
- Al-Harabsheh, A.M. 2014. Language and Gender Differences in Jordanian Spoken Arabic: A Sociolinguistics Perspective. *Theory and Practice in Language Studies* 4 (5): 872. <https://doi.org/10.4304/tpls.4.5.872-882>.
- Alhawamdeh, A. 2016. A Sociolinguistic Investigation of Two Horani Features in Sūf, Jordan. Doctoral Dissertation, University of Essex, UK.
- Al-Khawaldeh, N.N., S.N. Olimat, B.M. Mashaqba, M.D.A. Al-Omari, and A.A. Alkhawaldeh. 2023. Normativity and Variation in the Address Terms System Practiced among the Jordanian Youth Community. *Languages* 8 (1): 31.
- Almhairat, A. 2015. Code-switching from the Jordanian Bedouin Dialect to the Jordanian Urban Dialect, in Amman: A Sociolinguistic Study. Doctoral dissertation, Middle East University, Jordan.
- Al-Shawashreh, E. 2016. Aspects of Grammatical Variation in Jordanian Arabic. Doctoral dissertation, University of Ottawa, Canada.
- Al-Tamimi, F. Y. A. 2001. Phonetic and Phonological Variation in the Speech of Rural Migrants in a Jordanian City. Doctoral dissertation, University of Leeds, UK.
- Al-Wer, E. 1997. Arabic Between Reality and Ideology. *International Journal of Applied Linguistics* 7 (2): 251–265. <https://doi.org/10.1111/j.1473-4192.1997.tb00117.x>.
- Al-Wer, E., and B. Herin. 2011. The Lifecycle of Qaf in Jordan. *Langage Et Société* 4: 59–76.
- Al-Wer, E., Lutz, E., and De Jong, R. (2011). Phonological merger. *Encyclopedia of Arabic language and linguistics, online edn*. Leiden: Brill. https://doi.org/10.1163/1570-6699_eall_eall_com_vol2_0065
- Al-Wer, E. 1999. Why do different variables behave differently? Data from Arabic. *Language and society in the Middle East and North Africa*, 38–57]
- Al-Wer, E. 2007. The formation of the dialect of Amman: From chaos to order. In *Arabic in the City* (pp. 69–90). Routledge.]
- Bader, Y., and N. Bani-Ali. 2020. Consonantal Variation in Syrian Refugees’ Speech in Jordan. *Journal of Applied Linguistics and Language Research* 7 (2): 1–18.

- Cohen, L., L. Manion, and K. Morrison. 2017. Coding and Content Analysis. In *Research Methods in Education*, ed. L. Cohen, L. Manion, and K. Morrison, 668–685. Routledge.
- Czajka, S.J., and J. Sharit. 1998. Age Differences in Attitudes Toward Computers. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 53 (5): P329–P340. <https://doi.org/10.1093/geronb/53b.5.p329>.
- Docherty, G.J., P. Foulkes, J. Milroy, L. Milroy, and D. Walshaw. 1997. Descriptive Adequacy in Phonology: A Variationist Perspective. *Journal of Linguistics* 33: 275–310. <https://doi.org/10.1017/s002222679700649x>.
- Drager, K. 2010. Sensitivity to Grammatical and Sociophonetic Variability in Perception. *Laboratory Phonology*. 1 (1): 93–120.
- Eckert, P. 2000. *Language variation as social practice: The linguistic construction of identity in Belten High*. Wiley-Blackwell.
- Eckert, P. 2008. Variation and the indexical field. *Journal of Sociolinguistics* 12: 453–476.
- Eckert, P. 2012. Three Waves of Variation Study: The Emergence of Meaning in the Study of Sociolinguistic Variation. *Annual Review of Anthropology* 41: 87–100. <https://doi.org/10.1146/annurev-anthro-092611-145828>.
- Fadda, H. E. 2019. *Language Variation in Western Amman*. Doctoral Dissertation, Trinity Western University.
- Hamdieh, A.M., M. Jarrah, A.R.M. Alkhalhaineh, and E. Al-shawashreh. 2022. Variation in Negation Patterns of Verbless Clauses in Ammani Arabic. *Jordan Journal of Modern Languages and Literatures* 14 (4): 1039–1058.
- Heale, R., and D. Forbes. 2013. Understanding Triangulation in Research. *Evidence-Based Nursing* 16 (4): 98–98. <https://doi.org/10.1136/eb-2013-101494>.
- Horesh, U. 2021. Palestinian Dialects and Identities Shifting Across Physical and Virtual Borders. *Multilingua* 40 (5): 647–673.
- Hunecy, A., B. Mashaqba, R. Abu Hula, and B.K. Thnaibat. 2021. Phonological Aspects of Al-Issa Arabic, a Bedouin Dialect in the North of Jordan. *Heliyon* 7 (7): e07405. <https://doi.org/10.1016/j.heliyon.2021.e07405>.
- Johnstone, B., and S. Kiesling. 2008. Indexicality and Experience: Exploring the Meanings of /aw/-Monophthongization in Pittsburgh 1. *Journal of Sociolinguistics* 12 (1): 5–33. <https://doi.org/10.1111/j.1467-9841.2008.00351.x>.
- Johnstone, B., J. Andrus, and A. Danielson. 2006. Mobility, Indexicality and the Enregisterment of “Pittsburghese.” *Journal of English Linguistics* 34 (2): 77–104. <https://doi.org/10.1177/0075424206290692>.
- Johnstone, B. 2007. /aw/ Goes Dahntahn: Exploring the Social History of Sociolinguistic Indexicality in Pittsburgh. In *Texas Linguistics Forum* (Vol. 51, pp. 17–27).
- Labov, W. 1966. The Effect of Social Mobility on Linguistic Behavior. *Sociological Inquiry* 36 (2): 186–203. <https://doi.org/10.1111/j.1475-682x.1966.tb00624.x>.
- Labov, W. 1972. *Sociolinguistic Patterns*. Philadelphia: University of Pennsylvania Press, USA.
- Labov, W. 1984. Field Methods of the Project on Linguistic Change and Variation. In *Language in Use: Readings in Sociolinguistics*, ed. J. Baugh and J. Sherzer, 28–53. Printice-Hall: Englewood Cliffs, NJ.
- Labov, W. 1990. The Intersection of Sex and Social Class in the Course of Linguistic Change. *Language Variation and Change* 2: 205–254. <https://doi.org/10.1017/s0954394500000338>.
- Labov, W. 1994. *Principles of Linguistic Change*, Vol. 1: Internal factors. Oxford: Blackwell.
- Letenneur, L., J. Launer, K. Andersen, M.E. Dewey, A. Ott, J.R.M. Copeland, J.-F. Dartigues, P. Kragh-Sorensen, M. Baldereschi, C. Brayne, A. Lobo, J.M. Martinez-Lage, T. Stijnen, and A. Hofman. 2000. Education and Risk for Alzheimer’s Disease: Sex Makes a Difference EurodemPooled Analyses. *American Journal of Epidemiology* 151 (11): 1064–1071. <https://doi.org/10.1093/oxfordjournals.aje.a010149>.
- Mayuuf, H. H. and Majeed, S. 2020. A Sociolinguistic Approach to Language Variation in Iraqi Arabic Contexts. *Talent Development & Excellence*, 12.
- Miller, C. 2007. Arabic urban vernaculars: Development and change. In *Arabic in the City*, ed. C. Miller, E. Al-Wer, D. Caubet, and J.C.E. Watson, 15–46. Routledge. <https://doi.org/10.4324/9780203933367>.
- Milroy, L. 1978. *Observing and Analyzing Natural Language*. Blackwell Publishers.
- Milroy, L., and M. Gordon. 2003. *Sociolinguistics: Methods and Interpretation*. Blackwell. <https://doi.org/10.1002/9780470758359>.

- Milroy, L., and J. Milroy. 1992. Social Network and Social Class: Toward an Integrated Sociolinguistic Model. *Language in Society* 21 (01): 1. <https://doi.org/10.1017/s0047404500015013>.
- Nasser Eddin, N. 2011. The Intersectionality of Class and Gender: Women's Economic Activities in East and West Amman. Doctoral Dissertation, University of Warwick, UK.
- Noble, H., and R. Heale. 2019. Triangulation in Research, with Examples. *Evidence Based Nursing* 22 (3): 67–68. <https://doi.org/10.1136/ebnurs-2019-103145>.
- Plichta, B., and D. Preston. 2005. The/ays/Have It: The Perception of/ay/as a North-South Stereotype in United States English. *Acta Linguistica Hafniensia* 37: 107–130.
- Poplack, S., and S. Tagliamonte. 2001. *African American English in the Diaspora*. Blackwell.
- Rakhieh, B. A. 2009. The Phonology of Ma'ani Arabic: Stratal Or Paralell OT (Doctoral dissertation, University of Essex).
- Sawiński, Z. 1986. The Prestige of Education. *International Journal of Sociology* 16 (1–2): 144–159. <https://doi.org/10.1080/15579336.1986.11769903>.
- Silverstein, M. 1979. Language structure and linguistic ideology. In *The Elements: A parsession on linguistic units and levels*, ed. R. Clyne, W. Hanks, and C. Hofbauer, 193–247. Chicago Linguistic Society.
- Silverstein, M. 2003. Indexical Order and the Dialectics of Sociolinguistic Life. *Language and Communication* 23 (3–4): 193–229. [https://doi.org/10.1016/s0271-5309\(03\)00013-2](https://doi.org/10.1016/s0271-5309(03)00013-2).
- Silverstein, M. 2013. How language communities intersect: Is 'superdiversity' an incremental or transformative condition? Plenary lecture, international conference on Language and Super-diversity: Explorations and Interrogations, University of Jyväskylä, June 2013 (unpublished ms).
- Suleiman, Y. 1993. The Language Situation in Jordan and Code-switching. *New Arabian Studies* 1: 1–20. <https://doi.org/10.1017/cbo9780511609787.003>.
- Swaie, M. 1984. A Sociolinguistic Study of/q/and its Variants. Unpublished manuscript.
- Szakay, A. 2008. Social networks and the perceptual relevance of rhythm: A New Zealand case study. *University of Pennsylvania Working Papers in Linguistics*, 14(2):148–156.
- Tagliamonte, S.A. 2006. *Analysing Sociolinguistic Variation*. Cambridge University Press. <https://doi.org/10.1017/cbo9780511801624>.
- Tolman, D.L., E.A. Impett, A.J. Tracy, and A. Michael. 2006. Looking Good, Sounding Good: Femininity Ideology and Adolescent Girls' Mental Health. *Psychology of Women Quarterly* 30: 85–95. <https://doi.org/10.1111/j.1471-6402.2006.00265.x>.
- Voicu, M.C., and A. Babonea. 2011. Using the Snowball Method in Marketing Research on Hidden Populations. *Challenges of the Knowledge Society* 1: 1341–1351.
- Walker, A. 2007. The effect of phonetic detail on perceived speaker age and social class. In *Proceedings of the 16th International Congress of Phonetic Sciences*, Saarbrücken (pp. 1453–1456).
- Walker, A., C. García, Y. Cortés, and K. Campbell-Kibler. 2014. Comparing social meanings across listener and speaker groups: The indexical field of Spanish/s. *Language Variation and Change* 26 (2): 169–189.
- Zhang, Q. 2008. Rhotacization and the "Beijing Smooth Operator": the Social Meaning of a Linguistic Variable. *Journal of Sociolinguistics* 12 (2): 201–222. <https://doi.org/10.1111/j.1467-9841.2008.00362.x>.
- Zibin, A. 2019. A Phonological Analysis of English Loanwords Inflected with Arabic Morphemes in Urban Jordanian Spoken Arabic. *SAGE Open* 9 (2): 2158244019841927.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.

Rozan Al-Hloul obtained her MA in Linguistics from The University of Jordan, Amman, Jordan. She is currently an English teacher at the Jordanian Ministry of Education. She is mainly interested in sociolinguistics and second language acquisition.

Abdel Rahman Mitib Altakhaineh is Assistant Professor of English language and linguistics at The University of Jordan, Jordan. He obtained his PhD in linguistics from Newcastle University, UK. His research interests lie in the areas of morphology, lexical semantics, psycholinguistics, sociolinguistics and

technology in language learning. He published research papers in *Lingua*, *Languages*, *Journal of Computer Assisted Learning*, *Studia Linguistica*, *Language and Cognition*, *Canadian Journal of Linguistics*, *Applied Linguistics Review* and others.

Marwan Jarrah is Associate Professor of English Language and Linguistics at the Department of English Language and Literature at the University of Jordan, Amman/Jordan. He obtained his PhD in Linguistics from Newcastle University, UK. He is mainly interested in syntax. He published research papers in *Lingua*, *Studia Linguistica*, *Canadian Journal of Linguistics*, *Journal of Linguistics*, *Natural Language & Linguistic Theory* and others.

Ekab Al-shawashreh is Associate Professor of English Language and Linguistics at the Department of English Language and Literature at Yarmouk University, Irbid/Jordan. He obtained his PhD in Linguistics from University of Ottawa, Canada. His main research interests lie in the areas of sociolinguistics, corpus linguistics and syntax–prosody interface.