Codeswitching in Online Written Communication among Arabic English Bilinguals: A Sociolinguistic Perspective

Nada Saleh Alsamhan, Fatimah Almutrafi*

College of Languages & Translation King Saud University, Riyadh, Saudi Arabia

Corresponding Author: Fatimah Almutrafi, E-mail: falmutrafi@ksu.edu.sa

ARTICLE INFO

ABSTRACT

This study aims to investigate the sociolinguistic functions of code-switching in tweets. It also examines the potential effects of two social variables, namely gender and education, as well as whether language choice relates to topic. The study adopts Myers-Scotton's (1993) Markedness Model and Malik's (1994) Model to analyze the data. The findings revealed that each code choice served different functions such as avoiding a lack of facility, addressing a different audience or showing users' religious or cultural identity. Gender of twitter users showed significant effects on language choice, i.e., females preferred posting tweets completely in their native language whereas males preferred posting codeswitched tweets. Educational level, also, revealed some effects on language choice. Namely, tweets in the native language were posted more frequently by participants with below college education, while the combination of the bilingual's two languages was utilized more often by those with high education. As for codeswitched tweets, participants with college education showed the highest preference for this code choice. Furthermore, Twitter users switched codes based on topic, e.g., Arabic-written tweets were frequently associated with religion-related hashtags whereas English-written tweets were associated with education-related topics. Social-related topics accounted for the highest number of codeswitched tweets. Overall, this study lends evidence to the view that online communication influences the choice of the language used.

Key words: Code-switching, Language Choice, Sociolinguistics, Twitter Users

INTRODUCTION

The widespread use of Twitter to communicate has exerted a significant effect on how people convey their ideas. Consequently, altering language use is a world-wide strategy to serve different functions of communication (Hadour, 2019). In the Saudi online community, numerous different languages are used as inserted languages such as Turkish, French, and Spanish. Notably, English is the most commonly used language by Saudis on Twitter. Therefore, this study focuses primarily on Arabic sentences in which English is the inserted language and vice versa.

Twitter users can share their thoughts or opinions or update others on their present circumstances (Java et al., 2007). Tweets are limited to 280 characters. To designate tweets that relate to a specific topic, Twitter users use symbols such as the hashtag, "#." Therefore, Twitter users establish hashtags about certain topics for different reasons; the hashtag also helps to disseminate the tweet (Weller et al., 2014). Java et al. (2007) identified different types of user intentions, such as daily chatting, conversation, sharing information, and reporting news. Twitter has rapidly become an accepted feature of everyday life with a broad appeal (Gillen and Merchant, 2013).

Herring (1996) categorized computer-mediated communication (CMC) into two types: The communication can either take place in real time (synchronous), or it may occur at a later point in time (asynchronous). What distinguishes Twitter from other social media platforms is its integration of the two types. Hence, in the follow-up conversation, Twitter users can communicate simultaneously, and other communications can occur a while after posting a tweet. Although studies about code-switching (CS) between Arabic and English have enriched the literature, there remains a minimal understanding of code-switching within the context of online communication among Saudis. Therefore, this study aims to investigate language choice practices as employed by Saudi Twitter users. Specifically, it focuses on the functions of writing in English and code-switching among Saudis on Twitter.

REVIEW OF THE LITERATURE

Sociolinguists differ in the way they define code-switching. Some linguists (e.g., Milroy & Muysken,1995), argued that code-switching is a sign of a deficient competence of language. On the contrary, others such as Weinreich (1968)

confirmed that code-switching happens due to a speaker's bilingual ability (Hadour, 2019). The consensus among researchers is that, code-switching is one of the most widespread sociolinguistic phenomena that has been investigated throughout time. Appel and Muysken (2006) mentioned that the functions of CS differ from one community to another. This can be a result of the various cultures of communities that may affect how people think and communicate.

Code-switching takes place in bilingual situations in which a speaker alternates between two or more languages, or even between two varieties of a language, in the same context. Gumpertz (1977) defined code-switching in the context of conversation as a phenomenon in which a speaker uses juxtaposition of elements of speech that belong to two grammatical systems which, in turn, leads to conversational inferences. A speaker tends to codeswitch for various functions such as reiteration, in which a speaker repeats his/her speech in other languages to convey the message clearly or to reply to someone else's statement. The latter is part of the Accomodation Theory estabilshed by Giles (1973) in which a speaker adjusts his/her speech to accommodate the interlocutor's speech. There are several attempts to estabish a solid theoritcal framework to explain attitudes behind code choice and code-switching. For example, the Communication Accommodation theory (Giles, 1973) and the Markedness Model (Myers-Scotton, 1993) that focus on how listeners and speakers make language choice regarding their goals. Communication Accommodation Theory (CAT) is a sociopsychological framework that offers a prediction and explanation of many individuals behabiour towrds adjusting communication to maintain or decrease social distance in interaction (Giles, 1973). Over decades, "speech" was renamed "communicative accommodation theory" (Giles et al., 1987) in recognizing that the theory is applicable to a broad range of communicative behaviors such as non-verbal communications (see Cohen, 2014, for a historical account). CAT occurs when a speaker shifts his/her speech to accommodate the interlocutor. A speakers' speech may not be influenced only by the immediate situation as other principles can be negotiated during an interaction to align with that situation. For example, salient social category memberships (e.g. when an immigrant talks with the new country's language to convey the message of being a fully-fledged citizen) and social-historical context (Giles & Ogay, 2007). CAT suggests that there are two accommodative strategies, namely convergence (minimizing differences) and divergence (emphasizing differences) in the context of social distance. In support of this theory, Gumperz (1982) considered this behavior as either a 'we–code' or a 'they-code'. The 'we-code' reflects communicator's involvement and intimacy and the 'they-code' indicates communicator distance and dominance.

Markedness Model (MM) introduced by Myers-Scotton (1993) was an attempt to investigate the social motivations behind code choice. Myers-Scotton (1993) proposed three maxims, or rules, of code-switching: the unmarked-choice maxim, the marked-choice maxim and the exploratory-choice maxim. The unmarked choice occurs when the

language choices are expected. The marked choice maxim refers to the unusual choice of language. Exploratory-choice maxim is the least common form of language choice. It occurs when an unmarked choice is not clear. Interactors, thus, codeswitch to convey the message. According to Myers-Scotton (1993), each interaction maxim is more or less unmarked depending on a particular Rights and Obligations set (RO set). That is, *Rights and Obligations* is a theoretical frame used to refer to what people can expect in any situation. Rights and Obligations set is also known as norms that are established by the community. The unmarked and marked choices are motivated by negotiating the RO set that speakers see as beneficial to them in some way (Myers-Scotton, 1998).

Code-switching occurs by the insertion of a single foreign word or a larger segment. Therefore, researchers categorize code-switching into three types: tag-switching, inter-sentential and intra-sentential switching (Poplack, 1980). The first type can be defined as an insertion of a tag (i.e. a word) in one language into an utterance that is entirely in another language (Hamers et al., 2000). The second one occurs at a sentence level. In contrast to tag switching users, a user of this type is fluent in both languages since they follow the rules of the two languages. Finally, intra-sentential switching occurs commonly within a sentence.

It is also worth mentioning that the terms *code-switching* and *code-mixing* have been subject to lengthy debate among linguists. Both occur when two languages contact in one clause or utterance. Some linguists do not consider code-switching and code mixing to be two distinct phenomena (e.g., Poplack, 1993 and Sebba et al., 2012). Poplack (1993) used *code-switching* to describe an issue in language contact situations. She covers all levels of language alternation by using this term. The same approach is followed by Grosjean (1996) who preferred to rename intra-sentential to intra-clause as switching occurs within one clause. Sebba, Mahootian & Jonsson (2012) used both terms interchangeably. Other linguists differentiate between code-switching and code-mixing depending on the function that motivates a speaker to alternate languages. Holmes (2013) stated that a speaker mixes up codes indiscriminately or due to incompetence, whereas switching is motivated by the circumstances of a situation or social meanings of the two codes. Similarly, Bentahila & Davies (1983) demonstrated the difference between the two terms as code-switching identifies the ability of bilinguals to choose one language over the other in a certain occasion. Code mixing, however, is a random alternation between two languages. Bokamba (1989) argued that code-switching and code mixing vary in the position where the alternation occurs. According to Bokamba, code-switching associates with the alternation at the clause level, while code mixing happens within a clause. This study is based on Poplack's (1993) and Grosjean's (1996) classifications of code-switching and the tendency to use code-switching to all levels of linguistic structures.

The distinction between *code-switching* and *borrowing* has also been a hot topic for several theorists. Pfaff (1979)

stated that code-switching can be done by bilinguals who have the knowledge of the two languages, while borrowing can be used by monolinguals. Holmes (2013) differentiated between borrowing and code-switching in terms of form. Holmes states that borrowed elements, in contrast to switched words, are commonly adapted to the speaker's native language. Woolard (1988) and Poplack et al. (1989) considered borrowed words as more assimilated syntactically, morphologically and phonologically into L1 than switched words. Woolard adds that, in addition to being integrated in structure and phonology, borrowing also needs to be approached in terms of social content. This is because not all phonological and syntactic features in languages are distinctive. Therefore, these features may not be crucial defining factor of languages' boundaries. By contrast, Halmari (1997) described the two terms as a continuum in progression in which code-switching precedes borrowing in time. Other researchers (e.g., Gumpers, 1982) follow the same distinction and consider borrowed words as part of the borrowing language for the same reason.

Twitter as a Social Media Platform

The social network 'Twitter' is particularly popular in Saudi Arabia. In January 2020, the number of Saudi Twitter users has reached 14.35 million users. They ranked the fourth country by the number of users. Saudis debate all sorts of issues on social media and connect with people who share their interests and activities. In addition, young Saudis use Twitter as a tool to enable their voices to reach officials. However, sociolinguistic studies, especially those that examine language choice of Saudi users, have not received enough attention. There are, however, some studies that addressed this matter. Simsim (2011) investigated the Internet usage and user preferences in Saudi Arabia. Nearly 700 participations with different socio-economic factors, such as gender, age, nationality, city of residence, level of education, and so on, participated in the study. The findings showed that males use Internet more than females, and young participants more than older ones. For the purposes of using the Internet, searching for cultures was found to be more frequently used via the Internet by older participants more than younger ones. Whilst, chatting with others and entertainment were found to have more frequent usage among young users than older ones.

Communication and Information Technology Commission (CITC) in Saudi Arabia conducted a field survey to identify the percentage of population who use the Internet and the main reasons for using it in the country. The survey revealed that almost 93% of Saudis use the Internet, and communication and education are two of the main reasons.

Non-Arabic Writing among Arabs on Internet Functions

Language choice is often motivated by linguistic factors such as education, religion, economy, socio-cultural activities, politics and domestic use of the language (Ugot,

2008). Alghamdi & Petraki (2018) found an increasing use of Arabizi (i.e., using Roman letters and numbers to represent Arabic sentences) for writing in Internet among young Arabs. Their findings showed that Arabic participants used Arabizi for different purposes; i.e., (a) it is the language of their peers, (b) it is cool and stylish, (c) Arabizi is easier and faster than the Arabic language, and (d) Arabizi is considered as a secret code among peers. Albawardi (2018) conducted a study on 47 Saudi university female students to investigate *what languages used in communication*. The results showed that participants communicate in multilingual ways: Arabic, English, Arabicised English (i.e. English with Arabic letters) and Arabizi. The participants also reported that language choice differs for different platforms. On Instagram, for example, English is used more than Arabic, while participants write in Arabic more in SMS. This study has a good contribution to analyzing language choice. However, it is limited to females with nearly one level of education. In addition, it does not identify the topics that have led social media users to write non-Arabic tweets.

With regard to code-switching to English functions, a number of previous studies offered possible reasons that explain why people typically code-switch. This list is not an all-inclusive one, but it offers many reasons from different situations, wherein code-switching to English, in particular, would be present. Some of these examples are as follows: to create a humorous atmosphere, to express communal affiliations (as found by Peuronen, 2008), to express solidarity, to sign ethnicity with an addressee (Holmes, 2013), to express feelings by using certain words that sound nicer, depending on the preference of the speaker, in the other language, to show their familiarity with a second language (Omar & Ilyas, 2018) or to accommodate their speech to the listener (Wardhaugh, 2006). These findings are similar to some extent to those found in many code-switching studies in terms of computer-mediated communication functions. However, since the popularity of social media networks has resulted in a big range of using code-switching in the text form, studies investigating this attitude are needed (Begum et al., 2016).

On the ground of electronic environment communications, Mustafa (2011) investigated code-switching functions in text messaging. The researcher focuses on Arabic-English code-switching and switching to Arabizi in SMS among teenagers (both males and females) in Jordan. The data were gathered from 1500 text messages, using a questionnaire which was answered by 150 subjects. The results revealed different reasons behind the participants' switching to English which are as follows: economy, euphemism, prestige, unfamiliarity with Arabic equivalents, the use of acronyms and abbreviations, and the attractiveness of the English language. Mustafa (2011) also examined the factors that enhance the spread of code-switching to English among bilingual teenagers as a result of mixed marriages. Moreover, living abroad then coming back to Jordan was considered a factor that may increase this phenomenon.

Habtoor & Almutlagah (2018) explored code-switching among 12 Saudi female bilinguals on Twitter. They aim to

identify the types of code-switching (from Arabic to English and vice versa) and the parts of speech of the switched words. The data were collected by taking screenshot of 1260 tweets from the participants' Twitter accounts. The results indicated that tweets with English inserted elements is more than tweets of Arabic inserted elements. Regarding the syntactic category of inserted elements, nouns were the most used, while prepositions and pronouns were the least occurrence.

Begum et al. (2016) identified five motivations for code-switching that clarify why people usually switch codes in social media: (1) adjusting one's speech to align with circumstance; (2) topic; (3) identity; (4) context; and (5) formality. For the first motivation, Omar & Ilyas (2018) outlined that some of the natives in Saudi Arabia codeswitch to Arabic or colloquial Arabic of Saudi Arabia to fit in the Saudi community. For example, when a non-Arabic speaker says "Yallah Shbaab" (Hello Guys) to start a conversation. The second motivation, i.e., topic, describes the situation when a speaker/social-media-user switch from a language to another to discuss a specific topic. This can be seen in Al-Khatib & Sabbah's (2008) study, where Jordanian participants switch to English when they talk about taboo or offensive topics without feeling embarrassed; for instance, the English words *toilet, boyfriend, cancer.* In addition, Albawardi (2018) found that Saudi students codeswitch to English in topics such as school matters, technology, music and beauty, whereas Arabic was used in the topics about prayers and condolences. With regards to expressing identity, Holmes (2013) demonstrated that Maori people often codeswitch to Maori by insertion of Maori words to state the ethnic identity with an addressee. Similarly, Scottish Highlanders try to intersperse Gaelic words with their English for the same purpose. In terms of the context motivation, Albawardi (2018) explored young Saudi women's language use. Language choice was found to be multimodal in which choosing Arabic or English varies regarding the mode (WhatsApp, Snapchat). To whom a student talks also determines the language used. For instance, students use English more in the context of talking with friends, while they use Arabic in their communications with family members. In addition, Al Alaslaa (2018) found that Saudis switch to Modern Standard Arabic in the context of religious discourse.

People sometimes tend to show their formality to the receiver towards a certain situation by code-switching to other languages or other language varieties. A study by Al Alaslaa (2018) revealed that Twitter users in Saudi Arabia codeswitch to Modern Standard Arabic to shift from the comic to the serious speech. Moreover, formal situations like official meetings and public lectures require a formal variety of speech that, thus, motivate communicators to codeswitch (Inuwa et al., 2014).

Code-switching and Social Variables: Gender, Age, and Level of Education

Social factors such as age, gender, race, religion and education level can come into play in determining which language is to be used on a particular occasion. The present

study considers the gender and the level of education as social variables, and it excludes the age and other variables because it is difficult to know them from the selected Twitter accounts' users.

With respect to gender-based differences on reasons of code-switching, Sukyadi, Wirza, and Hasiani (2012) explored this matter on Facebook. A total of 24 participants who speak both English and Indonesian languages answered a questionnaire to identify the reasons for code-switching. Data were also collected from the participants' Facebook walls and posts. In terms of gender differences, women used words that express apology and gratitude more often than men.

To explore the role of gender on code choice in terms of quantity, Al-Khatib and Sabbah (2008) attempted to investigate code-switching to English among 46 male and female Jordanian university students. In terms of gender effect, this study demonstrated a significant role of gender where female participants showed a stronger tendency than male participants to code-switching. Males, in contrast, had a stronger tendency to write in totally Arabic than totally English or mixed languages. Al-Qaysi & Al-Emran (2017) studied the influence of gender, major, degree and level of education on code-switching usage in social media among Omanis. Both students and educators within the higher educational institutions were asked to fill up a questionnaire survey. Interviews were also performed with both groups. The results revealed that females make up the majority of students and educators who use code-switching in social networking websites. Findings also revealed that students holding Bachelor degrees, in compare to whom are holding diploma, rank the highest category of using code-switching while chatting in social platforms. As researchers indicate, due to the limited number of educators who participated, the influence of education level was not measured effectively. However, it is clear from the students' group that there is a significant relationship between the degree of education and code-switching. In contrast to these findings, Inuwa et al. (2014) found that male Hausa-English bilinguals, utilize code-switching more often than females. In terms of the relationship between education level and attitudes to code-switching, Inuwa et al. (2014) reported similar findings to that found by Al-Qaysi & Al-Emran (2017) in which master degree holders tend to codeswitch more frequently than others with a lower level in education.

Functions of Code-switching

Previous works focused on language choice and functions of switching codes in the oral interaction. However, functions and motivations of interactions among people differ and this area have not received much attention. Therefore, the present study aims to fill the gap and investigate written language choice via social media interaction. Research exploring face-to-face communications have proposed a wide variety of motivations and factors affecting code choice. The most frequent and common functions of code-switching are listed in Table 1. These four frameworks are considered the most referenced by studies investigating this phenomenon.

Table 1. The functions of cs by four models

Myers-Scotton (1993)	1. CS as a sequence of unmarked choices. 2. CS itself as the unmarked choice. 3. CS as a marked choice. 4. CS as an exploratory choice.
Appel and Muysken (2006)	1. Referential function. 2. Directive function. 3. Expressive function. 4. Phatic function. 5. Metalinguistic function. 6. Poetic function.
Malik (1994)	1. Lack of facility. 2. Lack of register. 3. Semantic significance. 4. To address different audience. 5.To show identity with a group. 6. To emphasize a point. 7. Mood of the speaker. 8. Habitual expressions. 9. Pragmatic reasons. 10. To attract attention.
Hoffman (1991)	1. To talk about a particular topic. 2. To quote somebody else. 3. To provide emphasis about something (to express solidarity). 4. To make an interjection (by inserting sentence fillers or sentence connectors). 5. To repeat in order to clarify. 6. To express group identity. 7. To show intention of clarifying speech content for interlocutor. 8. To soften or strengthen a request or command. 9. To meet a real lexical need or to compensate for lack of an equal translation. 10. To exclude others when a comment is intended for an exclusive audience.

METHODOLOGY

Aim

The study aims to provide sufficient information about the Saudis' behavior toward each code choice. This analysis seeks to discover how previous frameworks can demonstrate Saudi Twitter users' thoughts behind switch codes. It also finds how social media affects language choices. Assigning frequencies to each language choice, which is mainly required to answer the second research question, is represented by following the quantitative analysis. The study attempts to answer the following research questions:

1. What are the functions of writing in English and using code-switching among Saudis on Twitter?
2. Does language choice differ by gender and/or education?
3. What are the topics that trigger English writing and code-switching?

Research Sample

A total of 186 Saudi Arabic-English bilinguals participated in this study. Bilingualism was one of the criteria of choosing the sample. This restriction was to avoid bias choosing

certain codes. Participants were asked about their levels in English and sixty of them reported no knowledge at all and, thus, were excluded. The final sample consisted of 126 participants (34 males, 92 females). The place of residence was also considered to ensure if the participants are influenced by other sociolinguistic variations (Nestor & Regan, 2015). In that sense, participants are from three different places, namely living in Saudi Arabia, in an Arabic-speaking country or living in an English-speaking country. The participants were divided into three main categories according to their educational levels; i.e., less than college education, college education and high education.

Research Tools

Two techniques were used to collect the data. First, a questionnaire was distributed online and 126 Saudi bilingual users of Twitter filled the questionnaire. The questionnaire was written in Arabic and was divided into three sections. The first section focused on demographic information such as gender, place of residence, educational level and the level of English language proficiency. The second section was designed to elicit data on language code choice and the third section addressed the different functions which were partially based upon Myers-Scotton's (1993) markedness theory model as well as Malik's (1994) review regarding the ten reasons for code-switching.

Data were, also, obtained from hashtags focusing on five topics, namely religion, social issues, educational, athletic and politics (Al Alaslaa, 2018). The ratios of each language code indicate the tendency of using this particular language code in this area. All tweets must meet specific criteria in order to be included in the investigation. Therefore, tweets including advertisement and those written in languages other than Arabic and English were excluded. The hashtag must be a trend in Saudi Arabia for more than an hour. This restriction was followed to ensure its spreading and thus a great number of Saudi Twitter users can tweet about it. Then, tweets that satisfied the additional following criteria were selected:

1. The tweet is from an active account in terms of tweeting and replying to other Twitter accounts.
2. Tweets written by Twitter users with nicknames were limited to those who live in Saudi Arabia. This is done by looking at the users biograph. If the tweet was written by a real name, no limitation for the place of residence. This retraction is important for a better and accurate understanding of Saudis' attitudes towards language choice.
3. The date of establishing the account must be in 2019 or prior.
4. Only tweets that discuss the hashtag's topic are included.
    Hence, during the period March – April, 2020, the five hashtags were chosen. They are:
1. اونلاين_جامعه_الملك_سعود# *online dʒamiʕah ʔalmalik saʕuːd* "Online courses at King Saud University". This hashtag is an education-related topic. It was trending in Saudi Arabia after changing the studying system at King Saud University. Studying at this university used to be classroom studying. However, due to the Coronavirus

disease 2019 (COVID-19), studying was shifted to on-line. As students claimed that different issues have resulted from this change, this hashtag was established.

2. ‏السعوديه_الاول_بحقوق_الانسان# *ʔalsʕu:diah ʔalʔwal bi ħgu:g ʔalʔinsan* "Saudi Arabia cares the most about human rights". This hashtag is a socio-political topic. Using this hashtag, Saudis expressed their opinions towards the health care and other socio-issues that are provided by the government to the Saudi society.

3. ‏فعالياتكم_المنزليه# *faʕaliyatikum ʔalmanziliyah* "Activities at home". This is a social hashtag which discusses activities that can be done at home during the curfew.

4. ‏المسجد_النبوي# *ʔalmasdʒid ʔalnabui* "The Prophet's mosque". This hashtag is about a religious topic. It was trending after two sequential events. The first is as a result of closing the mosque as a precautionary action to control the spread of COVID-19 on Thursday. The second event that caused the hashtag to be a trend for the following day is the Friday sermon.

5. ‏الفراج_يستهزي_بالحجر_الصحي# *ʔalfaradʒ yistahzi bi ʔalħadʒir ʔalsħi* "Alfarraj [a sports presenter] mocks the quarantine". This hashtag is a sport-related topic. Through this hashtag, Saudi sports' fans expressed their anger about wearing the face mask by Alfarraj. They considered his action as mockery of the quarantine.

Tweetdeck website (https://tweetdeck.twitter.com/) was used to go over the hashtags. By taking screenshot for the latest 50 tweets that satisfied the above criteria, analyzing language codes took place. A file of screenshotted tweets was needed to have a data base in order to avoid problems resulting from deletion by tweets' writers.

Data Coding and Analysis

The functions of code choice have been investigated by analyzing the responses of participants, then, comparing them to the functions already identified in previous models and studies. Tweets from the five hashtags have been analyzed to explore whether topics can trigger code-switching or certain language code. As a first step, the researcher adapted Myers-Scotton's (1993) Matrix Language Frame which suggests that in a multilingual situation there is a Matrix Language (ML) that determines the morphosyntactic frame of utterances and an Embedded Language (EL) which is the inserted language that acts as a guest. Then, extracted tweets from each hashtag were categorized as follows:

1. Tweets that were written entirely in Arabic.
2. Tweets that were written entirely in English.
3. Arabic-written tweets that had embedded English elements.
4. English-written tweets that had embedded Arabic elements.

The extracted tweets from each hashtag were classified into three categories. The first category contained *Arabic-written tweets*. The second one contained the *English-written tweets*. The last category contained tweets written with *code-switching between Arabic and English*. These procedures were used with each hashtag separately. The high

frequency of each category represented which topic triggers Arabic, English or code-switching.

RESULTS AND DISCUSSION

To address the first research question regarding the functions of writing in English and using code-switching among Saudis on Twitter, the various functions of language choice in tweets were examined. Other functions that were mentioned by participants were also assessed. The findings suggest that there are significant differences between the functions that motivate the broad use of English or switching between Arabic and English on Twitter. Hence, they were separately included for discussion in the following subsections.

Functions of English-written Tweets

The three functions that were primarily found in the use of English by Saudi Twitter users on were lack of facility, addressing a different audience, and a lack of registral competence. In addition, functions such as emphasizing a point and expressing identity were also found in several responses (see Table 2).

In terms of lack of facility, Malik (1994) noted that switching codes can be triggered when bilinguals cannot find an appropriate expression or when they want to convey a message that can be expressed smoothly in English. As the table demonstrates, most participants indicated that they write tweets in English due to a lack of facility in their native language. This can also be explained as by a desire to diminish their embarrassment while expressing their feelings. Elm (2009) noted that Swedish online users tend to use a foreign language to achieve this purpose. Twitter users, also, tend to post in English when they write in the field of science, as they lack registral competence. According to Malik (1994), bilinguals may switch to another language when they are more competent in it. This finding supports the previous study by Albawardi (2018) who found that Saudi female students tend to use English when discussing technology. Additionally, sharing information in English is one of the most common practices of scholars on Twitter (Veletsianos, 2012).

Table 2. Numbers of functions motivating English-written tweets

Functions for English-written tweets	Number of occurrences	Percentage (%)
Lack of facility	20	28.2
Lack of register	11	15.5
To emphasize a point	5	7
To show identity with a group	5	7
To address a different audience	13	18.3
To attract attention	4	5.6
Pragmatic reasons	2	2.8
Habitual expressions	0	0
English-written tweets as the unmarked choice	1	1.4
English-written tweets as an exploratory choice	1	1.4

One of the reasons for switching codes is to emphasize a point. Malik (1994) suggested that bilinguals tend to switch to another language to focus on a situation. This function is consistent with that reported by Gal's (1988) analytic model of code choice. Additionally, a number of Twitter users indicated that they use English to display their religious or Saudi identity. To the best of our knowledge, this is the first study that affirms this new online language choice function. The function of addressing a different audience was the second most common reason for using English. Bilinguals switch codes when they intend to convey a message to people from different linguistic backgrounds (Malik, 1994, Eldin, 2014). One participant indicated that he uses English with certain topics to avoid speaking with other Arabic-speaking Twitter users. This finding is in line with previous studies (e.g., Alghamdi & Petraki, 2018). Numerous responses also showed that participants believe that English-written tweets may attract attention to what has been wrote. Similarly, pragmatic reasons accounted for the same purposes. This goes in line with previous research (e.g., Elm, 2009). It is clear from the data that the use of English was never intended to request, invite, or express gratitude to someone.

For the unmarked choice function, Myers-Scotton (1993) reasoned that certain language choices are used as a strategy to communicate using in-group languages. Social media exerts a powerful impact on Saudis' language choice as they choose to post in English to be part in the speech community. A similar finding was uncovered by Siebenhaar (2006), in his study of language choice in online communication among Swiss-German bilingual users. Siebenhaar reported that the use of a particular language variety was based on both individual preference and on the predominant variety used in a specific situation. Language choice may exist as an exploratory choice, wherein bilinguals think that a message would be more comprehensible in another language. In our data, Saudi Twitter users repeated some Arabic-written posts in English. Such behavior can be used to reiterate and explain what has already been stated in face-to-face and online communications, respectively (Gumperz, 1982; Dawoud & Shah, 2017).

A variety of reasons that induce the participants to use English were identified. For example, one participant indicated that English was used to quote an English speech due to a preference to convey it in the original language of the quotation (i.e., without translation). This function was explained by Gumperz's (1982) and Hoffman's (1991) review. This is consistent with the findings by Hadour (2019), in which French Twitter users switch to English for this purpose as well. Another participant reported that posting English-written tweets simply as a reply to another English-written tweet. This attitude can be explained under the umbrella of the CAT (Giles, 1973).

Functions Served by Switching Between Arabic and English

The most common motivations behind the code-switching reported by the participants were lack of registral competence, mood of the Twitter user, lack of facility, and the unmarked choice, respectively (see Table 3, below). Nearly all the listed functions that involve the use of English on Twitter were also listed for the functions of codeswitched tweets.

The third function that resulted in the occurrence of code-switching was the lack of facility. As mentioned earlier, Malik (1994) stated that bilinguals may tend to switch to another language when their native language lacks an equivalent phrase. This finding is consistent with Choy's (2011) study which found that Mandarin Chinese-English Facebook users switch to Mandarin Chinese to convey a more precise meaning. Lack of registral competence represented the largest number of code-switching. Bilinguals seem to codeswitch when their language competency in the two languages is unequal (Malik, 1994). Such attitude may be due to the status of English as the principal language used in numerous scientific fields. This function is consistent with other studies (e.g. Choy, 2011; Eldin, 2014; and Begum et al., 2016). Other participants indicated that they codeswitch to English to emphasize a point. This function was also explored in Appel and Muysken's (2006) code-switching model. Bilinguals tend to codeswitch to persuade an audience, as they believe that code-switching attracts attention (Nerghes, 2011).

Expressing religious or cultural identity was reported by some users. Despite the infrequency of the function, one Saudi Twitter user utilized code-switching to English to display their identity. As Saudis speak Arabic in most situations, this can be more noticeable in the case of switching to Arabic, as when the online users switch to Arabic in English-speaking communications to express their religious or Arabic identity. This behavior was evidently observed in other studies (e.g., Al-Khatib & Sabbah, 2008).

Addressing a different audience was also one of the reported functions. This function was extensively discussed in previous frameworks (e.g. Grosjean, 1982; Gumperz, 1982; and Appel & Muysken, 2006). With respect to online communication, Choy (2011) noted that English-Chinese bilinguals excluded non-Chinese speakers by translating wishes into Mandarin Chinese. Code-switching can, also, be used as a strategy for attracting attention (Malik, 1994; Ustinova & Bhatia, 2005). As a result, it was widely used in the advertisement. In the online communication, Nerghes (2011)

Table 3. Numbers of functions motivating codeswitched tweets based on the questionnaire responses

Functions for CS tweets	Number of occurrences	Percentage (%)
Lack of facility	9	14.8
Lack of register	13	21.3
To emphasize a point	3	4.9
To express identification with a group	1	1.6
To address a different audience	6	9.8
To attract attention	1	1.6
Pragmatic reasons	1	1.6
Habitual expressions	2	3.3
CS as the unmarked choice	8	13.1
Mood of the Twitter user	10	16.4

found that code-switching to English as a marketing strategy could positively attract the consumer to the product. Thus, it can play a significant role in attracting attention to tweets, as reported by some participants.

Bilinguals may also codeswitch for pragmatic reasons. Some twitter users tend to use English expressions to display their educational and socioeconomic status. In terms of the habitual expressions, some participants codeswitched to English when greeting and thanking others. This goes in line with previous studies. For example, Khatib and Sabbah (2008) found that Jordanians highly value Arabic greetings, as they switch to Arabic for such purposes. Those two findings contrast with Hadour's (2019) study, which found that the majority of habitual expressions were codeswitched to English by French Twitter users. This contradiction can be explained by the difference between two different linguistic backgrounds.

Myers-Scotton (1993) proposed that code-switching can be distinguished as unmarked (expected) and as marked (unexpected). In the case of an unmarked choice, code-switching can be expected in the speech community. In Saudi Arabia, Arabic language is regarded as an unmarked choice, while English indicates a marked choice. However, some English elements became more common than the Arabic ones; in this case, the English linguistic element would be regarded as the unmarked choice. For the Twitter user to communicate in the in-group language, code-switching would be necessary.

With respect to the mood of Twitter users' functions, the second largest proportion of participants indicated that Twitter interactions are ultimately intended to satisfy their specific needs and desires. In the same vein, Tsoumou's (2019) found that Congolose people codeswitched in online communications to express anger and criticism.

Possible Effects of Gender and Education on Language Choice

Saudi Twitter users used Arabic in 54 (42.9%) of their tweets, and used Arabic alongside English in their tweets in 59 responses (46.8%), which is the highest percentage, used and codeswitched only 13 (10.3%) of the participants adhered to this manner of writing (see Table 4). Gender and educational level are presented together rather than separately. In terms of the place of residence, the findings illustrated that the differences between the three places are far from being significant. Therefore, this factor was excluded from discussion.

In terms of education, when we compared Saudis with less than a college education and those with a college education to those with a high education, the findings revealed that the use of Arabic-written tweets decreased as the users' levels increased. By contrast, when we compared the use of both English and Arabic for tweets, the findings displayed a gradual increase with higher educational level. In this respect, there is a relationship between writing in English and level of education. For these users (i.e., with bachelor's degrees and higher), the combination of writing in Arabic and English was deemed the appropriate choice because it served their interests. It is worth addressing that reviewing the literature revealed a paucity of research on the relationship between language choice and educational level in the context of the online Saudi community.

The data also demonstrated that there is no straightforward relationship between codeswitching and education. Saudis with a college education represented a high percentage of those who used codeswitching in comparison to Saudis with less than a college education and those with a high education as well (see Table 5). This finding is consistent with a previous study by Al-Qaysi and Al-Emran (2017). Al-Qaysi and Al-Emran found that Omani participants holding bachelor's degrees used code-switching in social networks more than the participants with less than a college education.

Regarding the role of gender, after analyzing 34 responses by men and 92 by women, the findings revealed that completely Arabic-written tweets were shared by women more than men. This finding contrasts with a study by Mustafa and Hussein (2011), who found that Jordanian males had a stronger tendency to use only Arabic more than females. Furthermore, males' tweets used Arabic alongside English more than those of females. As for codeswitching, the data indicated that men utilized codeswitched tweets more than women (see Table 6). This finding is consistent with Inuwa et al. (2014). However, those findings contrast with those of Mustafa and Hussein (2011) and Al-Qaysi and Al-Emran (2017), who reported that females used codeswitching more often than males.

Topics that Trigger English Writing and Code-Switching

A total of 329 tweets were extracted from five hashtags. Subsequently, a corpus of 250 tweets was collected via a set of hashtags related to five topics, namely religion, social, education, athletic, and politics. Following the prediction of Grosjean (1982), who stated that content discourse heavily influences language choice, we assumed that topics of the hashtags would trigger different code choices. The 50 tweets from each hashtag were categorized based on whether the tweets were completely Arabic-written tweets, completely English-written tweets, or codeswitched tweets which

Table 4. Numbers and percentages of responses for each group

Type of tweets	Male			Female		
	Below College Education	College Education	High Education	Below College Education	College Education	High Education
Totally Arabic Tweets	4 (3.2%)	7 (5.6%)	2 (1.6%)	11 (8.7%)	25 (19.8%)	5 (4%)
Arabic/English tweets	2 (1.6%)	11 (8.7%)	4 (3.2%)	3 (2.4%)	26 (20.6%)	13 (10.3%)
Codeswitched tweets	0	3 (2.4%)	1 (0.8%)	0	8 (6.3%)	1 (0.8%)

Table 5. Numbers and percentages of tweets based on education level

Level of Education	Totally Arabic Tweets	Arabic/English Tweets	Codeswitched Tweets	Total
High Education	7 (27%)	17 (65%)	2 (8%)	26
College Education	32 (40%)	37 (46%)	11 (14%)	80
Below College Education	15 (75%)	5 (25%)	0	20

Table 6. Numbers and percentages of tweets based on gender

Gender	Totally Arabic Tweets	Arabic/ English Tweets	Codeswitched Tweets	Total
Male	13 (38%)	17 (50%)	4 (12%)	34
Female	41 (44%)	42 (46%)	9 (10%)	92

combined codeswitching between Arabic and English. Table 7 indicates the number of tweets in each category.

As the table suggests, language choice differed depending on the hashtag topic. As for المسجد_النبوي# *ʔalmasdʒid ʔalnabui* "The Prophet's mosque", a religion-related topic, all the latest 50 tweets were written in Arabic. This finding can be explained by the fact that the Arabic language is regarded as the linguistic vehicle of the Quran and Islamic legislation. Tweet 1 is a representative example.

Tweet 1

يارب. .فرج قريب
"Y Rabb (Oh, Lord).. [grant us] near relief.
#المسجد_النبوي"

By contrast, the majority of tweets under the hashtag اونلاين_جامعه_الملك_سعود# *online dʒamiʕah ʔalmalik saʕu:d* "Online courses at King Saud University", an education-related topic, were in English (see Tweet 2). It also contained relatively a number of codeswitched tweets (see Tweet 3). This can be explained by two factors. First, since English is the language of study used in most major universities, students tend to discuss issues related to studying in English. In that sense, this finding aligns with previous findings by Albawardi (2018) who found that female students prefer to use English when they communicate online with their colleagues. Another probable explanation is that some educators are non-Arabic speakers; as a result, the students wished to convey the message (i.e., objections to certain issues) to them.

Tweet 2

We all know that in emergency days there is an "exception", and a person is excused from what he usually does in normal days.
But in @_KSU The definition of the "exception" is: You have to double what you were doing in normal days!
#اونلاين_جامعه_الملك_سعود

Tweet 3

#اونلاين_جامعه_الملك_سعود

You need to chill and calm down we're all going through this together, we're all attending online classes, tutorials and even labs! We're doing assignments and studying for exams and working on projects this is university.
من وين يجيبون لكم درجات
"#اونلاين_جامعه_الملك_سعود
Y'all need to chill and clam down we're all going through this together, we're all attending online classes, tutorials and even labs! We're doing assignments and studying for exams and working on projects this is university. From where do they [the teachers] evaluate us [the students] (How can we be evaluated)?"

In this tweet, English represents the matrix language, while Arabic is the inserted language. The Twitter user posted a scolding message to students who were complaining about studying online by starting in English then switching to Arabic.

In terms of the social-related hashtag, فعالياتكم_المنزليه# *faʕaliyatikum ʔalmanziliyah* "Activities at home", the tweets were significantly diverse in the distribution of language codes. Since social matters were discussed by most community members, a variety of language codes existed. Tweet 4 and Tweet 5 are representative examples for Arabic and English tweets, respectively.

Tweet 4

جربت التطريز
#فعالياتكم_المنزليه
"I tried embroidery"
#فعالياتكم_المنزليه

Tweet 5

#الحجر المنزلي
#فعالياتكم_المنزليه
quarantine mood

Furthermore, this hashtag contained the largest number of codeswitched tweets. Tweet 6 demonstrates how Arabic-English codeswitching is used in this topic.

Tweet 6

استغل وقتك هالفترةو احصل على دورات تدريبية مجانية ومعتمدة(أون لاين)
"Utilize your time these days to take advantage of free certified training courses (online)
doroob.sa/ar
#turnt to_technology
#we are all_responsible
#Doroob
#فعالياتكم_المنزليه *#activities of_quarantine*"

Table 7. Numbers of tweets based on topic

Topic	Arabic-written Tweets	English-written Tweets	Codeswitched Tweets	Total
Religious	50	0	0	50
Educational	17	25	8	50
Social	28	5	17	50
Political	44	3	3	50
Athletic	47	0	3	50

The Twitter user utilized Arabic for posting this tweet. However, he switched to English for the word *online* which was written by Arabic letters.

The hashtag related to the political topic, #السعوديه_الاول بحقوق_الانسان ʔalsʕu:diah ʔalʔwal bi ħgu:g ʔalʔinsan "Saudi Arabia cares the most about human rights", contained Arabic, English and codeswitched tweets. However, Arabic-written tweets comprised the highest percentage compared to the other language codes. The following Tweet 7 - Tweet 9 illustrate how these language codes are used in this topic.

Tweet 7

إذا لم تكن هذه البلاد الأولى في حقوق الإنسان فمن يكون إذا؟!
وإذا لم يكن حكام هذه البلاد هم عرابوا هذه الحقوق فمن يكون إذا؟!
#السعوديه_الاول_بحقوق _الانسان

"If this country [Saudi Arabia] is not the first in human rights, which is it [country] then?!
And if the governors of this country are not the godfathers of these rights [human rights], who are they then?!

Tweet 8

Part 2
This is what #saudi government doing for its people but unfortunately this wont be seen because media is showing negatives about this great country may Allah bless them
#السعوديه_العظمى
#السعودية_الاول_بحقوق_الانسان

Tweet 9

جهود جبارة تقوم بها مشكورة، لضمان وصول رسائلهم لكافة فئات
@SaudiMOH !...المجتمع. وصلتني اليوم
Powerful efforts by @SaudiMOH to ensure delivering MOH's awareness messages to all community categories. Received today…!
StayHome
#خلك_بالبيت
#السعودية_الاول_بحقوق_الانسان

In Tweet 9, the Twitter user commented on efforts by the Ministry of Health in Saudi Arabia by utilizing Arabic and English to convey the exact message. He started in Arabic and then switched to English.

With regard to the sport-related hashtag, which is #الفراجيستهزي_بالحجر_الصحي ʔalfaradʒ yistahzi bi ʔalħadʒir ʔalʃhi "Alfarraj [a sports presenter] mocks the quarantine", the data showed that 94% of the latest 50 tweets were written entirely in Arabic, while only 6% of the remaining tweets

included codeswitching to English. In that respect, the hashtag did not contain English-written tweets within the latest 50 tweets. The following Tweet 10 and Tweet 11 are examples of Arabic and codeswitched tweets in this topic.

Tweet 10

أكثر إعلامي أثبت بتصرفاته صدق المقولة: من أمن العقوبة أساء الأدب.
#الفراج_يستهزي_بالحجر_الصحي
"He [Alfarraj] is a journalist who confirms by his behavior the truth of the saying: If one knows that there is no punishment, one will misbehave.

Tweet 11

#الفراج_يستهزي_بالحجر_الصحي
وين الاستهزاء ؟
مبزرة الهاشتاقات والترند اشغلونا

Where is mocking ?
Childish [Twitter users] bother us with [their] hashtags and trend"

This tweet was completely written in Arabic. However, the Twitter user inserted some English Twitter-related terms such as *hashtag* and *trend*. It is noticed that the English embedded words *Alhashtagat* 'the hashtags' and *altrend* 'the trend' underwent some morphological changes to assimilate the matrix language of tweet, which is Arabic. The words *Alhashtagat and altrend* were defined by the Arabic prefix of the definite Article *al-*. The word *alhashtagat* was also pluralized by the Arabic plural suffix *-at*. This finding was observed in previous studies (e.g. Habtoor & Almutlagah, 2018).

Therefore, after determining the predominant code choice, the topic exerts an effect on language choice practices. Moreover, it can be concluded that religious, political, and athletic topics trigger Arabic-written tweets more often than other topics. With respect to the education-related topic, English-written tweets are the most predominant. As for codeswitching, social-related hashtags were most associated with it.

CONCLUSION

This study sought to investigate the functions behind each language choice as used by the Saudi Twitter community. It has also examined two social variables, namely gender and education, and whether language choice and code-switching would differ according to these variables. The last research question that this study set out to explore involved

investigating whether language choice relates to topic. The findings suggest that there are considerable differences between the functions of writing in English and for code-switching between Arabic and English on Twitter. Avoiding a lack of facility was the most common function motivating tweets in English, while the function of avoiding a lack of register was the most common reason for codeswitched tweets. Moreover, there are numerous reported functions which have not received much attention. With respect to the two social variables, the data revealed that gender and education influence language choice practices. In terms of the role of education, completely Arabic tweets were posted more often by participants with below college education, while the combination of Arabic and English was associated more frequently with participants with high education. As for codeswitched tweets, participants holding bachelor's degrees showed the highest preference for this code choice. As for gender, females preferred posting completely Arabic tweets over males. Males, in contrast, preferred posting codeswitched tweets over females. The study, also, suggested that topic plays a role in determining each code choice. Arabic-written tweets were frequently associated with religion-related hashtags. Conversely, English-written tweets were associated with education-related topics. Social-related topics accounted for the highest number of codeswitched tweets. This study, however, has some limitations which should be addressed in future research. An investigation of the role of topic in triggering language choice was performed by analyzing 50 tweets extracted from five hashtags across two months. A large number of tweets during a longer period would result in more data, which would help to generalize these findings. Additionally, online communication influences the choice of the language used. Therefore, future research could consider the effects of social media on code choice in online communication over time.

REFERENCES

Al Alaslaa, S. (2018). A Sociolinguistic Study of Code Choice among Saudis on Twitter (Doctoral dissertation, the University of Michigan).

Albawardi, A. H. (2018). Digital literacy practices of Saudi female university students (Doctoral dissertation, University of Reading).

Al-Khatib, M., & Sabbah, E. H. (2008). Language choice in mobile text messages among Jordanian university students. SKY Journal of Linguistics, 21(1), 37-65.

Alghamdi, H., & Petraki, E. (2018). Arabizi in Saudi Arabia: A Deviant Form of Language or Simply a Form of Expression? Social Sciences, 7(9), 155. doi:10.3390/socsci7090155.

Appel, R., & Muysken, P. (2006). Language contact and bilingualism. Amsterdam University Press.

Al-Qaysi, N., & Al-Emran, M. (2017). Code-switching usage in social media: a case study from Oman. International Journal of Information Technology and Language Studies, 1(1), 25-38.

Begum, R., Bali, K., Choudhury, M., Rudra, K., & Ganguly, N. (2016). Functions of code-switching in tweets: An annotation framework and some initial experiments. In Proceedings of the Tenth International Conference on Language Resources and Evaluation (LREC'16) (pp. 1644-1650).

Bentahila, A., & Davies, E. E. (1983). The syntax of Arabic-French code-switching. Lingua, 59(4), 301-330.

Bokamba, E. G. (1989). Are there syntactic constraints on code-mixing? World Englishes, 8(3), 277-292.

Choy, W. F. (2011). Functions and reasons for code-switching on facebook by UTAR English-Mandarin Chinese bilingual undergraduates (Doctoral dissertation, UTAR).

Cohen, E. L. (2014). Relational and identity processes in communication: A contextual and meta-analytical review of communication accommodation theory. In Communication yearbook 38 (pp. 131-168). Routledge.

Dawoud, A., & Shah, S. R. (2017). Identifying the Functions of Code Switching in a Computer Mediated Online Communication. Journal for the Study of English Linguistics, 6(1), 1-23.

Eldin, A. A. T. S. (2014). Socio linguistic study of code switching of the Arabic language speakers on social networking. International journal of English linguistics, 4(6), 78.

Elm, M. S. (2009). Language deterioration revisited: The extent and function of English content in a Swedish chat room. In International Handbook of Internet Research (pp. 437-453). Springer, Dordrecht.

Gal, S. (1988). The political economy of code choice. Codeswitching: Anthropological and sociolinguistic perspectives, 48, 245-64.

Giles, H., & Ogay, T. (2007). Communication Accommodation Theory. In B. B. Whaley & W. Samter (Eds.), Explaining communication: Contemporary theories and exemplars (pp. 293-310). Mahwah, NJ: Lawrence Erlbaum.

Giles, H., Mulac, A., Bradac, J. J., & Johnson, P. (1987). Speech accommodation theory: The first decade and beyond. Annals of the International Communication Association, 10(1), 13-48.

Giles, H. (1973). Accent mobility: A model and some data. Anthropological linguistics, 87-105.

Gillen, J., & Merchant, G. (2013). Contact calls: Twitter as a dialogic social and linguistic practice. Language Sciences, 35, 47–58.

Grosjean, F. (1982). Life with two languages: An introduction to bilingualism. Harvard University Press.

Grosjean, F. (1996). Gating. Language and cognitive processes, 11(6), 597-604.

Gumperz, J. (1982). Discourse Strategies. Cambridge: Cambridge University Press.

Habtoor, H. A. & Almutlagah, G. F. (2018). Intra-sentential code-switching among bilingual Saudis on Twitter. International Journal of Linguistics, 10(2), 1-18.

Hadour, T. (2019). #Languagemixing on Twitter. Unpublished thesis.

Halmari, H. (1997). Government and codeswitching: explaining American Finnish (Vol. 12). John Benjamins Publishing.

Hamers, J. F., Blanc, M., & Blanc, M. H. (2000). Bilinguality and bilingualism. Cambridge University Press.

Herring, S. C. (Ed.). (1996). Computer-mediated communication: Linguistic, social, and cross-cultural perspectives (Vol. 39). John Benjamins Publishing.

Hoffmann, C. 1991. An Introduction to Bilingualism. New York: Longman

Holmes, J. (2013). "Language Choice in Multilingual Communities." An Introduction to Sociolinguistics, 4th ed., Routledge., pp. 34–46.

Inuwa, Y. N., Christopher, A. A., & Bakrin, H. B. (2014). Factors motivating code switching within the social contact of hausa bilinguals. IOSR Journal of Humanities And Social Science (IOSR-JHSS) Volume, 19, 43-49.

Java, A., Song, X., Finin, T., & Tseng, B. (2007, August). Why we twitter: understanding microblogging usage and communities. In Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis (pp. 56-65).

Malik, L. (1994). Socio-linguistics: A study of code-switching. New Delhi, ND: Anmol Publications Pvt. Ltd.

Milroy, L. and P. Muysken (eds.) 1995. One Speaker, two languages. Cambridge: Cambridge University Press.

Mustafa, R., & Hussein, R. F. (2011). SMS Code-switching among Teenagers in Jordan. Middle East University.

Myers-Scotton, C. (1993). Social motivations for code switching: Evidence from Africa. Oxford, UK: Oxford University Press.

Myers-Scotton, C. (1998). Codes and consequences: Choosing linguistic varieties. Oxford, UK: Oxford University Press.

Nerghes, A. (2011). The impact of code-switching on persuasion: An elaboration likelihood perspective. Wageningen University.

Nestor, N., & Regan, V. (2015). The significance of age and place of residence in the positional distribution of discourse like in L2 speech. Pragmatic Markers in Irish English, 408-432.

Omar, A., & Ilyas, M. (2018). The Sociolinguistic Significance of the Attitudes towards Code-Switching in Saudi Arabia Academia. International Journal of English Linguistics, 8(3).

Pfaff, C. W. (1979). Constraints on language mixing: Intrasentential code-switching and borrowing in Spanish/English. Language, 291-318.

Poplack, S. (1993). Variation theory and language contact. American dialect research, 251-286.

Poplack, S., Wheeler, S., & Westwood, A. (1989). Distinguishing language contact phenomena: evidence from Finnish-English bilingualism. World Englishes, 8(3), 389-406.

Poplack, S. (1980), "Sometimes I'll start a sentence in English y termino en español: Toward a typology of code-switching", Linguistics 18, 581-616.

Peuronen, S. (2008). Bilingual practices in an online community: Code-switching and language mixing in community and identity construction at www.godspeed.fi. Unpublished master's thesis. University of Jyväskylä, Jyväskylä, Finland. Retrieved from http://urn.fi/ URN: NBN:fi: jyu-200805061436.

Sebba, M., Mahootian, S., & Jonsson, C. (Eds.). (2012). Language mixing and code-switching in writing: Approaches to mixed-language written discourse. Routledge.

Siebenhaar, B. (2006). Code choice and code-switching in Swiss-German Internet Relay Chat rooms. Journal of Sociolinguistics, 10(4), 481-506.

Simsim, M. T. (2011). Internet usage and user preferences in Saudi Arabia. Journal of King Saud University-Engineering Sciences, 23(2), 101–107.

Sukyadi, D, Yanti W and Marina H. 2012. "Codeswitching on Facebook wall: A Case Study in Facebook Among English Department student's Wall". Indonesia University of Education.

Tsoumou, J. M. (2019). Codeswitching in computer-mediated communication among Congolose people (Doctoral dissertation, Universidad Complutense de Madrid).

Ugot, M. (2008). Language choice, code-switching and code mixing in biase. Global Journal of Humanities, 7(1&2), 27-35.

Ustinova, I., & Bhatia, T. (2005). Convergence of English in Russian TV commercials. World Englishes, 24(4), 495-508.

Veletsianos, G. (2012). Higher education scholars' participation and practices on Twitter. Journal of Computer Assisted Learning, 28(4), 336-349.

Wardhaugh, R. (2006). An introduction to sociolinguistics. Australia: Blackwell Publishing Ltd.

Weller, K., Bruns, A., Burgess, J., Mahrt, M., & Puschmann, C. (2014). Twitter and society (Vol. 89, p. 447). P. Lang.

Woolard, K. A. (1988). Codeswitching and comedy in Catalonia. Codeswitching: Anthropological and sociolinguistic perspectives, 48, 53-76.