A quantitative analysis of the reactions of viewers with hearing impairment to the intralingual subtitling of Egyptian movies

Linda S. Al-Abbas\textsuperscript{a}, Ahmad S. Haider\textsuperscript{b,}\textsuperscript{*}, Bassam Saideen\textsuperscript{c}

\textsuperscript{a} Middle East University, Jordan  
\textsuperscript{b} Applied Science Private University, Jordan  
\textsuperscript{c} Al-Ahliyya Amman University (AAU), Jordan

\textbf{ARTICLE INFO}

\textbf{Keywords:} Accessibility, Subtitling, Hearing-impaired, Movies, SDH

\textbf{ABSTRACT}

This study investigates how the viewers with hearing impairment reacted to the Modern Standard Arabic (MSA) subtitles added to some Vernacular Arabic movies during the COVID-19 stay-at-home period. A sample group of 106 deaf participants was asked to watch the MSA subtitled version of the Egyptian vernacular movie, \textit{Boushkash}, and fill in an 18-item questionnaire of five constructs, namely, (1) movie watching habits, (2) technical aspects, (3) linguistic and paralinguistic information, (4) attitude, and (5) future actions and recommendations. The analysis showed that the intralingual subtitling of vernacular Arabic comedy movies was received positively by the participants. The technical specifications of the subtitles were satisfactory and adequate. The paralinguistic information was helpful as it offers a better understanding of the movie and creates a sense of reality in the movie's scenes. This indicates that intralingual subtitling is a step in the right direction that makes audiovisual materials accessible to people with hearing impairment and enhances their feeling of social inclusion. The study concludes that more governmental care in the Arab countries should be directed towards this minority group by urging national TV channels to add intralingual translation to their various programs.

1. Introduction

Modern societies are becoming more aware of all humans’ rights regardless of their differences. This equality entails that people with disabilities have needs that must be met in order to ensure their integration and welfare. For this purpose, many countries are trying their best to provide this group of people not only with basic needs such as health and education but also with other wants that allow them to lead a normal and more enjoyable life. Achieving equality may be reflected in different areas, among which is equal access to information and culture conveyed via audiovisual media. This access was restricted for people with hearing or visual impairment for many years but is now made possible thanks to audiovisual translation.

Audiovisual translation (AVT) is defined as “a specialized branch of translation which deals with the transfer of multimodal and multimedia texts into another language and/or culture” (González, 2009, p. 13). There are different types of AVT that can help bridge the gaps resulting from sensorial problems, such as audio description (AD) for the blind and the partially sighted and subtitling for the deaf and hard of hearing (SDH), among others. This reinforces that “the keyword in screen translation is now accessibility” (Gambier, 2003, p. 179), where the most important purpose resides in bringing the text to the audience who would be otherwise deprived of the entire message.

The deaf and hard of hearing (DHH) in the Arab world have always been marginalized when it comes to what is broadcasted on TV due to the limited number of programs that are accompanied by sign language interpreting or subtitling. However, some channels and streaming platforms started to recognize this right and are trying to provide media accessibility in the Arab States to respond to the emerging regulations concerning this group.

COVID-19 has profoundly affected the entire world and impacted every aspect of life (Al-Salman and Haider, 2021a, 2021b; Almahasees et al., 2021; Haider and Al-Salman, 2020). During the COVID-19 pandemic crisis, television gained value and importance for many people as a means of distraction from the stress brought on by the disease and the measures taken by governments to stop its spread. As a result, streaming entertainment services like Netflix experienced exponential growth as people were sheltering in place with nowhere to go and little to do. Netflix reported that Europe, the Middle East, and Africa accounted for the largest number of new members, with around 16 million new

\textsuperscript{*} Corresponding author.  
\textit{E-mail address:} Ah_haider86@yahoo.com (A.S. Haider).

https://doi.org/10.1016/j.heliyon.2022.e08728

Received 16 June 2021; Received in revised form 24 September 2021; Accepted 5 January 2022

2405-8440/© 2022 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
customers creating accounts in the first three months of 2020 (BBC, 2020). Because of the extraordinary surge in the viewership and in order to provide the majority of people with means of entertainment during the lockdown that was imposed by many countries, Netflix offered the service of selecting subtitles in Modern Standard Arabic (MSA) as a translation of the dialect being spoken on screen. Some popular Egyptian comedy movies were provided with this feature to make the dialogues accessible for people with hearing loss (Bawaba, 2020).

This paper reports on the findings of a research project investigating subtitling for the deaf/Hard of Hearing in the Arab world context. The project’s initial results were published in Cogent Arts and Humanities in a paper titled “Using Modern Standard Arabic in Subtitling Egyptian Comedy Movies for the Deaf/Hard of Hearing.” Adopting a combined qualitative and quantitative analysis approach, Al-Abbas and Haider (2021) have mainly examined the linguistic and paralinguistic aspects of the subtitles of the Egyptian Comedy movie ‘Elly Baly Balaik’ qualitatively, with a small portion of the analysis geared towards a quantitative approach. In this part, the researchers compared the MSA subtitles with the vernacular Egyptian original script and found that the subtitles included information referring to speakers, non-verbal signs, music and sound effects, and vocal non-linguistic features. The qualitative part also discussed how humor is rendered and found that the MSA subtitles appeared to be odd and less humorous. In the qualitative part, the responses of 40 participants, based in Jordan, to a 12-item- questionnaire were analyzed. The findings showed that half of the participants had problems understanding the MSA subtitles and feeling the ‘comic’ sense of the movie. Furthermore, although the results showed that the technical aspects related to the font, color, and position of the subtitles were satisfactory for two-third of the respondents, they did not have enough time to process the information.

The quantitative findings revealed in Al-Abbas and Haider (2021) paper may not be generalizable since they are based on a relatively small sample of participants (40 respondents) in one geographical locale. Al-Abbas and Haider (2021, p. 13) highlighted this point in the limitation of their study:

“The number of the subjects included in the study was relatively limited due to the social distance measures imposed by the government during the Covid-19 pandemic. This made the process of collecting the data time-consuming as no more than 20 respondents could watch the movie at a time. Therefore, future studies are recommended to engage a larger number of DHH individuals.”

Consequently, and for our findings to be more representative, we deemed it necessary to investigate the responses of a larger number of participants in different geographical areas. To this end, we selected a different Egyptian comedy movie, namely “Babushkas,” which is also starred by Mohammed Saad to examine if the audience will have similar/different views towards movies of the same genre. Further, since the technical aspects and quality of subtitles in terms of the linguistic and paralinguistic information represent two constructs in the questionnaire, another movie with a different plot and most likely different subtitlers was selected to check whether these aspects yield similar/different reactions to the one examined in Al-Abbas and Haider (2021) study. We also improved on the questionnaire by adding new constructs and items in order to reflect and yield a more comprehensive coverage and representation. This paper qualitatively analyzes the responses of 126 participants who are based in Egypt and Jordan to an 18-item questionnaire. These additional elements are deemed necessary as they will lead to a considerable difference in the results considering that different statistical tests will be conducted in this piece of research. In this paper, the researchers test some research hypotheses using various complex statistical measures. Furthermore, unlike Al-Abbas and Haider (2021) paper, the present work places more emphasis on demographic analysis and description. It explores how the DHH community in Egypt and Jordan reacted to the MSA subtitling of some Arabic movies and thus attempts to answer the following question:

1. How have hearing-impaired viewers, based in Egypt and Jordan, reacted to the MSA subtitling of the Egyptian movie “Boushkaash”?

Although AVT practices in the Arab World have been widespread for the past few decades (see Al-Adwan, 2009; Debbas and Haider, 2020; Gamal, 2019), intralingual subtitling still lags when compared to other countries, such as Spain, the United Kingdom, Canada, and many others (Díaz-Cintas and Remael, 2014). By subtitling some Egyptian Arabic movies into MSA, Netflix has taken a step ahead to make the audiovisual content accessible to the DHH community. This means that subtitling for the deaf and hard of hearing did not receive considerable attention in the Arab world due to the lack of intralingual subtitled movies offered by the Arabic channels and streaming platforms.

2. Literature review

This section introduces subtitling as a mode of audiovisual translations. It also gives a brief overview about sensorial and linguistic accessibility with much focus on SDH. In addition, it sheds light on the status of the DHH community in the Arab world.

2.1. Subtitling

Subtitling is an AVT mode that is defined as “the translation of the spoken source language text of an audiovisual product, generally movie dialogues, into a written text, which is superimposed onto the image of the original product, usually at the bottom of the screen” (Luyken et al., 1991, p. 31). Subtitles can be interlingual, where a text is translated into another language to be understandable for audiences who do not know the original language, or intralingual, which involves rendering dialogues into written subtitles within the same language (see Figure 1).

As shown in Figure (1), intralingual subtitling changes the mode of translation but keeps the original language. This is usually performed for people with hearing impairment, i.e., the DHH, language learners, or people of other dialects. Interlingual subtitles are helpful for people who do not speak the language of the audiovisual material in addition to the hearing impaired. Bilingual subtitles are useful for those living in geographical areas in which two or more languages are spoken. All in all, subtitles with their different types aim at making audiovisual content accessible to different groups of people.

2.2. Accessibility

Advancement in technology and translation services has made linguistic and sensorial accessibility to audiovisual materials possible and achievable. The gap between different languages and cultures is reduced, and language barriers are mostly overcome with the help of AVT, which provides a variety of transfer modes, including subtitling, dubbing, and

![Figure 1. classifications of subtitles based on the linguistic dimension (Díaz-Cintas and Remael, 2014, p. 14, p. 14).](image-url)
voice-over. This linguistic accessibility is offered to people through rendering the content in their native language (Matamala and Ortiz Boix, 2016).

Information and cultural products are human right that needs to be granted to all people no matter their abilities (Neves, 2008). Since people with visual or hearing disabilities constitute a recognizable segment of the population of any country, they should have access to media services. Sensory accessibility is made possible with a sign language interpreter or subtitling for the deaf and hard-of-hearing (SDH), in addition to audio description (AD) for blind and visually impaired audiences (Matamala and Ortiz Boix, 2016).

SDH is an AVT mode that transfers the acoustic or auditory elements into written signs (see Aleksandrowicz, 2020; Tamayo and Chaume, 2017). It involves translating dialogues and lyrics in addition to the non-verbal auditory features, such as music, sound effects, and paralanguage. Neves (2005) states that subtitlers for DHH need to consider how to deliver information and not to limit themselves to what to deliver in order to achieve acceptability, legibility, synchronicity, readability, and relevance. Neves (2008) suggested some SDH parameters that result in readable and understandable subtitles and convey (visually) all information and details available through aural signs. These include the subtitles’ positioning and alignment on screen, their color, font type, number of lines, and reading time. According to Neves (2005), there are subtitling norms that must be followed when translating intralingually such as simplifying the lexical items and syntactic structures, increasing the reading time on screen, and using punctuation when needed to ensure the natural flow of subtitles. Moreover, she recommends a maximum two lines length per subtitle. This can be increased to three lines when providing information such as the speaker’s identification and information about the sound and sound effects.

SDH can enhance social inclusion for the DHH community members being among the rights that this group should enjoy. Unfortunately, this feature still lags in many countries, particularly the Arab. The DHH viewers may have greater access to foreign programs than those produced in their languages because very few channels and streaming platforms recognize this right.

2.3. The DHH community in the Arab World

According to the World Health Organization (2021), hearing loss is the most prevalent sensory disability that affects approximately 5% of the world’s population. Although this group makes up a significant segment of societies, their situation is less favorable when compared to their predominantly hearing counterparts.

Disability, in general, in the Arab culture, “has traditionally been seen as something shameful, an ordeal to be endured by the family” (Nagata, 2008, p. 69). The traditional widespread Arab opinion has viewed deafness as a pathology, and deaf people have been usually stigmatized with fewer socio-economic advantages (Broughton II, 2018). However, attitudes toward this group are undergoing significant changes and gradually improving (Hughes et al., 2014).

In the health sector, particularly in low-income and middle-income countries with poor healthcare access, ear specialists and audiologists are scarce. Hearing aid coverage is low, that individuals are least likely to receive the care they need (Halke et al., 2021).

In communication, Arabic Sign Languages have been established across the region, representing different dialects such as Iraqi, Egyptian, Saudi, Omani, etc. But because deaf people learn the local sign language, they can communicate freely with each other but always have problems understanding those who do not know the language (Hendriks and Baker, 2008). Therefore, the DHH people tend to form a close-knit community with their language, values, and traditions.

In education, the Arab world contains a few examples of effective deaf education. However, students with hearing loss usually suffer from communication, academic, social, emotional, and family problems (El-Zaigat and Al-Emam, 2005). They are reported to have poor expressive writing skills (El-Zaigat, 2007) and adequate reading skills in general (El-Zaigat, 2011). Moreover, most Arab countries have no secondary or post-secondary institutions for the deaf, leading them to work in manual trades like car mechanics, carpentry, or needlework with no opportunity to succeed further. Even university education is not feasible in most Arab countries due to the lack of trained interpreters (Kolb, 2016).

In general, the situation in the Arab World still hinders the DHH from participating fully in society, especially in terms of interpersonal communication and employment (Hendriks and Baker, 2008). In addition, assisting programs and training for this group are minimal, which may be due to several reasons that include lack of financial support or initiative.

3. Research methodology

This is a quantitative study that analyzes the responses of a group of deaf and hard of hearing to an 18-item questionnaire. In an attempt to support deaf and hard of hearing people, Netflix has provided its subscribers with the service of selecting MSA subtitles for a group of movies and series during the COVID-19 lockdown. For the purpose of this study, an Egyptian comedy movie, namely Boushkah, was selected. It is starred by Mohamed Saad, one of the most famous actors in Egypt and the Arab world. More importantly, it was one of the first movies to be intralingually subtitled and aired via Netflix. The subtitles examined in this study were extracted from Netflix. The researchers also watched the movie with the MSA subtitles on Netflix to make sure that the version downloaded from subscene.com was identical to the ones provided by Netflix.

For the purpose of this study, an Egyptian comedy movie, namely Elly Baby Balak, was selected for various reasons. First, it is full of comedy scenes; second, it is starred by Mohamed Saad, one of the most famous comedy actors in Egypt and the Arab world; and third, it is among the highest-grossing films in Egyptian Cinema.

3.1. Research instruments

The population of the study consisted of 106 deaf participants. The researchers contacted two centers for the deaf in Jordan and Egypt to provide them with the contact details of some members willing to participate in the study. They were sent a Google Drive link that included the Egyptian movie Boushkah with MSA subtitles. The members were then asked to fill in a Likert-type questionnaire administered in Arabic, being the official language in Jordan and Egypt (see Appendix 1 for the English Translation). The questionnaire was designed using Microsoft Forms to elicit the responses of the participants on their experience of watching Boushkah movie. It consisted of two sections: the first section aimed to collect demographic data on gender, age, country of residence, education, and reading speed. The second section consisted of 18 items to collect data on (1) movie watching habits, (2) technical aspects, (3) linguistic and paralinguistic information, (4) attitude, and (5) future actions and recommendations. The Snowball sampling method was also used as the researchers asked the participants to share the links with their deaf fellows.

The population of the study consisted of 126 deaf participants, with 20 being used for piloting, i.e., to examine the questionnaire’s reliability. The remaining 106 participants were included in the dataset of the present study. It is worth noting that this study’s ethical approval was obtained from the Deanship of Scientific Research at the Applied Science Private University with the approval number (FAS/2020–2021/244).

3.2. Questionnaire reliability

The present study questionnaire was sent to a jury of three experts in audiovisual translation to collect their remarks and comments on the five
4. Findings and discussion

A value of 0.725. 

84.9% of the participants have an excellent or very good reading speed (Excellent, very good, good, poor) (Table 3). 

Eighty-two participants have a high school or less. 24 participants have an undergraduate and graduate degrees, and only 24 participants have a high school or less. 84.9% of the participants have an excellent or very good reading speed (Excellent, very good, good, poor) (Table 3). 

To ensure that the subscales are internally reliable, a Cronbach’s alpha test on a sample of 20 participants who were not included in the study was used to validate the research instrument’s reliability (Cronbach, 1951). Cronbach’s alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is a test of reliability and internal consistency (Nunnally, 1978). Table 1 shows the results for the questionnaire’s 18 statements and how closely they are related in the five constructs.

Table 1 shows a high level of reliability and reflects a relatively high internal consistency. A reliability coefficient of 0.70 or higher is considered “acceptable” in social science research (Nunnally, 1978).

Correlation is a bivariate analysis that is used to measure the direction of the relationship between two variables and the strength of association between them. The sign of the coefficient indicates the relationship direction where a + sign shows a positive relationship, and a – sign suggests a negative relationship. Concerning the strength of the relationship, the correlation coefficient value varies between -1 and 1. If the correlation coefficient value goes towards 0, the degree of association between the two variables is said to be weak. Conversely, a value of ±1 shows a strong relationship.

Based on the results above, Pearson Correlation analyses were conducted, as Table 2 shows.

Table 2 shows the Pearson Correlation Matrix between the five constructs. The results show statistically significant relationships between most constructs since the Pearson Correlation Coefficient is greater than 0.50 (Kendal and Stuart, 1973). The strongest relationship was between ‘Technical Issues’ and ‘Future Actions and Recommendations’ with a Pearson correlation value of 0.729, followed by ‘Linguistic and Paralinguistic information’ and ‘Future Actions and Recommendations’ with a value of 0.725.

4. Findings and discussion

4.1. Demographic information

The demographic information part of the questionnaire aimed to gather information about gender, age (18–24, 25–30, or 30+), country (Egypt, Jordan), educational level (no schooling, High school or less, university undergraduate degree, university graduate degree), and MSA reading speed (Excellent, very good, good, poor) (Table 3).

As Table 3 shows, the male participants were 44 (41.5%), while the female participants were 62 constituting 58.5% of the sample. 37.7% of them were (25–30) years old, 34.9% between (18–24), and the last 29 participants (27.4%) were above 30 years old. Concerning the country where the participants are based, 55 participants (51.9%) were from Egypt, while 51 (48.1%) were from Jordan. Eighty-two participants have university undergraduate and graduate degrees, and only 24 participants have a high school or less. 84.9% of the participants have an excellent or very good reading speed, while the remaining 15.1% of the study sample have a good reading speed.

Table 1. Reliability analysis through cronbach alpha results (Cronbach, 1951).

| Construct                                        | No. of Items | Cronbach’s Alpha |
|--------------------------------------------------|--------------|------------------|
| Movie watching habits                            | 5            | 0.73             |
| Technical Issues                                 | 3            | 0.82             |
| Linguistic and Paralinguistic information        | 4            | 0.71             |
| Attitude                                         | 3            | 0.89             |
| Future Actions and Recommendations               | 3            | 0.94             |
| All Variables                                    | 18           | 0.93             |

4.2. Reactions on the intralingual subtitling of Arabic movies

The researchers examined the participants’ responses to the 18 items of the questionnaire. In Tables 4, 5, 6, and 7, the “% agree” column provides the percentage of participants who expressed ‘Agreement,’ ‘Disagreement,’ or ‘Uncertainty’ with the item was calculated. In addition, the standard error of the mean “M (SE)” for each item was also calculated.

Table 4 shows that 71% of the participants were satisfied with the length of the subtitles, and 76% had no problem with their position, font, size, shadow, and background color. These two findings related to the technical aspects are consistent with Al-Abbas and Haider (2021), to which a third is added, namely, the good synchronization of the subtitles with the scenes. This suggests that the intralingual subtitles provided by Netflix are relatively adequate in terms of the technical specifications.

The third construct aimed to elicit responses about the linguistic and paralinguistic information, as Table 6 demonstrates.

The participants’ responses to items 9 through 12 of the questionnaire show that 75% could understand all the MSA subtitles in the movie. Though so, almost half of the participants agreed that some senses were lost in the translation, among which is the comic sense, as was found earlier by Al-Abbas and Haider (2021). This may be due to the fact that the original language of the movie is Egyptian Arabic which has culture-specific expressions that are not easily rendered with the same impact into other languages or even dialects. Most importantly, MSA is not a language commonly used for everyday conversations on which most movies are based. Instead, it is primarily used in writing and formal oral interactions such as public speeches, sermons, and news broadcasting. This lends support to Yahiaoui et al. (2020), who found that the use of the Egyptian vernacular has a more flexible and adaptable linguistic system and, therefore, contributes to the translation of the movie.

Regarding the paralinguistic information such as the tone of voice, crying, laughter, and car horn, 81% of the participants agreed that it helped them better understand the movie. This reinforces that these elements are essential given their pragmatic and emotive functions in movies. They can better establish the scenes and offer a logical transition between them. This is consistent with Pereg (2009), who believes that the paralinguistic features need to be given special attention in SDH as the way we say things might sometimes offer more information than the words themselves. However, having many details displayed on the screen may hinder the participants’ reading of the main dialogues in the subtitles. These results confirm the previous findings reached by Al-Abbas
### Table 2. Results of Pearson Correlation

| Movie watching habits | Technical Issues | Linguistic and Paralinguistic information | Attitude | Future Actions and Recommendations |
|-----------------------|------------------|------------------------------------------|----------|-----------------------------------|
| **Movie watching habits** | 1                | **Technical Issues** | 0.522**  | 1                                 |
| Technical Issues       | 0.522**          | **Linguistic and Paralinguistic information** | 0.122    | 1                                 |
| Linguistic and         | 0.122            | **Attitude** | 0.229*   | 0.543**  | 0.619**  | 1 |
| Paralinguistic         |                   | **Future Actions and Recommendations** | 0.234*   | 0.729**  | 0.725**  | 0.560**  | 1 |

**p < 0.01, *p < 0.05.**

---

### Table 3. Descriptive statistics for the demographic variables.

| Variable       | Category     | Counts | Percent | Mean (SE) |
|----------------|--------------|--------|---------|-----------|
| Gender         | Males        | 44     | 41.5    | 1.58      |
|                | Females      | 62     | 58.5    |           |
|                | Total        | 106    | 100     |           |
| Country        | Egypt        | 55     | 51.9    | 1.48      |
|                | Jordan       | 51     | 48.1    |           |
|                | Total        | 106    | 100     |           |
| Age            | 18–24        | 37     | 34.9    | 1.92      |
|                | 25–30        | 40     | 37.7    |           |
|                | 30+          | 29     | 27.4    |           |
|                | Total        | 106    | 100     |           |
| Education      | No schooling | -      | -       | 1.95      |
|                | High school or less | 24 | 22.6 | |
|                | University undergraduate degree | 63 | 59.4 | |
|                | University graduate degree | 19 | 17.9 | |
|                | Total        | 106    | 100     |           |
| Reading Speed (MSA) | Excellent | 42     | 39.6    | 3.25      |
|                  | Very Good    | 48     | 45.3    |           |
|                  | Good         | 16     | 15.1    |           |
|                  | Poor         | -      | -       |           |
|                  | Total        | 106    | 100     |           |

(SE) standard error of the mean.

---

### Table 4. "%" and the mean and standard error "M (SE)" for ‘Movie watching habits’ items.

| Nu | Item                                                                 | M (SE) | % Agree | % Uncertain | % Disagree |
|----|-----------------------------------------------------------------------|--------|---------|-------------|------------|
| A  | Movie watching habits                                                |        |         |             |            |
| 1  | I watch foreign movies because they are subtitled into Arabic.        | 4.05   | 88%     | -           | 12%        |
| 2  | I watch translated foreign movies                                    | 3.96   | 70%     | -           | 30%        |
| 3  | I understand all subtitles in the translated movie, even if the      | 2.63   | 34%     | 12%         | 54%        |
|    | paralinguistic information, such as telephone ringing and applause,  |        |         |             |            |
|    | mention a few, is missing.                                            |        |         |             |            |
| 4  | I watch Arabic movies for entertainment, even if they are not        | 2.54   | 24%     | 11%         | 65%        |
|    | intralingually subtitled into Arabic.                                 |        |         |             |            |
| 5  | Arabic movies with Arabic intralingual subtitles are accessible via  | 4.14   | 94%     | -           | 6%         |
|    | paid platforms that require a subscription.                          | (0.09) |         |             |            |

M(SE) standard error of the mean.

---

### Table 5. "%" and the mean and standard error "M (SE)" for the ‘Technical issues’ items.

| Nu | Item                                                                 | M (SE) | % Agree | % Uncertain | % Disagree |
|----|-----------------------------------------------------------------------|--------|---------|-------------|------------|
| B  | Technical issues                                                     |        |         |             |            |
| 6  | The length of the subtitles was good, and I had enough time to read  | 3.99   | 71%     | 17%         | 12%        |
|    | them and process the information.                                     | (0.10) |         |             |            |
| 7  | The position, font, size, shadow, and background color of the        | 3.75   | 76%     | 17%         | 7%         |
|    | subtitles were good.                                                 | (0.06) |         |             |            |
| 8  | The subtitles were well synchronized with the scenes.                 | 4.10   | 88%     | 7%          | 5%         |

M(SE) standard error of the mean.

---

### Table 6. "%" and the mean and standard error "M (SE)" for the ‘Linguistic and Paralinguistic Information’ items.

| Nu | Item                                                                 | M (SE) | % Agree | % Uncertain | % Disagree |
|----|-----------------------------------------------------------------------|--------|---------|-------------|------------|
| C  | Linguistic and Paralinguistic Information                             |        |         |             |            |
| 9  | I could understand all MSA words used in the movie.                   | 4.21   | 75%     | 18%         | 7%         |
|    | (0.09)                                                                |         |         |             |            |
| 10 | Some senses were lost in the utterances when rendered into MSA.       | 2.76   | 29%     | 18%         | 53%        |
|    | (0.09)                                                                |         |         |             |            |
| 11 | Paralinguistic information such as telephone ringing, laughter, and  | 3.92   | 81%     | 12%         | 7%         |
|    | applause was reflected on the subtitles and helped me better         | (0.07) |         |             |            |
|    | understand the movie.                                                |         |         |             |            |
| 12 | Song lyrics were included in the subtitles, and this compensated    | 3.41   | 53%     | 24%         | 23%        |
|    | for the lack of access to music.                                      | (0.11) |         |             |            |

M(SE) standard error of the mean.

---

### Table 7. "%" and the mean and standard error "M (SE)" for the ‘Attitude’ items.

| Nu | Item                                                                 | M (SE) | % Agree | % Uncertain | % Disagree |
|----|-----------------------------------------------------------------------|--------|---------|-------------|------------|
| D  | Attitude                                                             |        |         |             |            |
| 13 | The experience of watching the movie was engaging.                   | 4.15   | 75%     | 12%         | 13%        |
|    | (0.11)                                                                |         |         |             |            |
| 14 | I would like to watch more intralingually subtitled Arabic Movies    | 3.51   | 70%     | 18%         | 12%        |
|    | in the future.                                                        | (0.10) |         |             |            |
| 15 | Having different Arabic movies intralingually subtitled enhances my  | 3.03   | 52%     | 11%         | 37%        |
|    | feeling of social inclusion.                                          | (0.11) |         |             |            |

M(SE) standard error of the mean.

---
movies intralingually is welcomed by many deaf participants. Moreover, intralingual subtitles positively impacted 52% of the participants, enhancing their social inclusion in Arab society. This percentage may rise if the number of intralingually subtitled movies and programs increases. It helps diminish the feelings of being marginalized and disadvantaged prevalent among the deaf in the Arab world. This lends support to Al-Abbas and Haider (2021), who found that such services have a good impact on the participants’ feeling of inclusion.

The last construct includes information about future actions and recommendations for intralingual subtitling of Arabic movies (Table 8).

Table 8. "% " and the mean and standard error 'M (SE)' for Future Actions and Recommendations items.

| Nu | Item | M (SE) | % Agree | % Uncertain | % Disagree |
|----|------|--------|---------|-------------|------------|
| 16 | Arabic media and streaming platforms should provide closed captions (in Arabic) for most of their programs. | 4.62 (0.08) | 93% | - | 7% |
| 17 | Arabic movies with intralingual subtitles should be available for free. | 4.69 (0.08) | 93% | - | 7% |
| 18 | Decision-makers in the Arab world should force Arabic national TV channels to add intralingual translation to their various programs. | 4.68 (0.10) | 93% | - | 7% |

M(SE) standard error of the mean.

Table 9. Linear regression results.

| Factor | β (SE) | t value | F value |
|--------|--------|---------|---------|
| Watching Movie Habits | 0.062 (0.13) | 0.491 | 26.004*** |
| Technical Issues | 0.347 (0.16) | 2.193* |
| Linguistic and Paralinguistic information | 0.692 (0.14) | 4.915*** |

Adjusted R² = 0.417

**p < 0.001, *p < 0.01, p < 0.05, (SE) standard error of Beta Coefficient.

Table 10. Results of simple Linear Regressions.

| Factor | β (SE) | t value | F value |
|--------|--------|---------|---------|
| Attitude of Deaf People | 0.449 (0.07) | 6.985*** | 47.539*** |

Adjusted R² = 0.307

**p < 0.001, *p < 0.01, p < 0.05, (SE) standard error of Beta Coefficient.

Table 11. Results of independent sample T-Test and one-way ANOVA test.

| Factor | Test | Movie watching habits | Technical Issues | Linguistic and Paralinguistic information | Attitude | Future Actions and Recommendations |
|--------|------|-----------------------|-----------------|------------------------------------------|----------|---------------------------------|
| Gender | t-value | 0.548 | 0.511 | 0.332 | -0.274 | 0.750 |
| Sig. t | 0.585 | 0.610 | 0.741 | 0.785 | 0.455 |
| Country | t-value | 0.099 | 0.474 | 0.375 | 0.574 | 0.354 |
| Sig. t | 0.921 | 0.637 | 0.709 | 0.567 | 0.724 |
| Age | F-value | 0.271 | 0.653 | 0.231 | 0.593 | 0.212 |
| Sig. F | 0.763 | 0.429 | 0.934 | 0.554 | 0.895 |
| Education Level | F-value | 0.571 | 0.905 | 0.426 | 0.441 | 1.631 |
| Sig. F | 0.567 | 0.408 | 0.655 | 0.645 | 0.201 |
| Reading Speed | F-value | 0.727 | 0.007 | 0.047 | 0.051 | 0.039 |
| Sig. F | 0.486 | 0.993 | 0.954 | 0.95 | 0.962 |

**p < 0.01, *p < 0.05.
conducted an independent sample T-Test and One-Way ANOVA Test as shown in Table 11.

The results of Table 11 show that none of the factors have affected the participants’ responses since all sig. values were greater than 0.05.

5. Conclusion

This study follows a quantitative approach to examine the efficiency of intralingual subtitling in providing the deaf and hard of hearing individuals with a means to better understand and enjoy the media content they consume. A group of 106 deaf and hard of hearing participants was asked to watch an Egyptian movie with MSA subtitles and fill in an 18-item questionnaire. The analysis demonstrated that many deaf people resort to foreign movies as a form of entertainment because they offer better access than Arabic movies and are available on most channels that do not require a subscription. Although Netflix’s service of intralingual subtitles is relatively new, the technical specifications were satisfactory and adequate. The linguistic aspects of the subtitles were, to some extent, acceptable. Since MSA is considered a lingua franca between Arabic-speaking populations, it was suitable for the variety used in the subtitles for audiences of different dialects. However, since its domains are restricted to formal settings, it was sometimes unsuitable for translating the daily conversations in the movies. Therefore, some senses were lost in the rendition of the informal dialogues of the movie. The paralinguistic information added to the subtitles was helpful as it offers a better understanding of the movie and creates a sense of reality in the movie’s scenes. The general attitude of the participants was positive, and they expressed their willingness to watch more intralingually subtitled movies in the future. Since the number of movies and programs that offer the feature of intralingual subtitles is minimal, there must be regulations imposed on TV channels and streaming platforms to provide this service for most of their shows. In fact, many countries started doing so. For instance, the BBC pledged to broadcast 100% of its programs with subtitles for deaf people by 2008, and the Global Television Network in Canada has been providing subtitles for all its programs since 2005 (Díaz-Cintas and Remael, 2014). In the Arab World, however, this feature still lags. By subtitling some Egyptian Arabic movies into MSA, Netflix has taken a step ahead towards the social inclusion of this minority group regarding accessibility to audiovisual content. Decision-makers are recommended to have a word in achieving equal access to digital media for all people by obliging TV channels to increase subtitling for the deaf community.

The results of the questionnaire analysis and the study findings can be useful for both translator training programs and industry. Consequently, the current study has the following implications. First, subtitling training programs should pay more attention to the differences between the text receivers with varying sensorial abilities. Second, more focus should be given to the technical specifications of subtitles, including the position, font, size, shadow, background color, and length of subtitles. Third, the diversity of the genres and varieties of language (standard vs. colloquial) should also be taken into account by translators and subtitlers to ensure the delivery of senses and effects.

One of the limitations of the present study is that it is conducted on the Arab audience and Arabic movies and is recommended to be replicated on other audiences in different countries to confirm the generalizability of the conclusions. In addition, the number of the subjects included in the study may be increased to engage a larger number of the DHF community.

Declarations

Author contribution statement

Linda S. Al-Abbas: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Ahmad S Haider: Performed the experiments; Analyzed and interpreted the data; Wrote the paper.

Bassam Saideen: Performed the experiments; Contributed reagents, materials, analysis tools or data.

Funding statement

This work was supported by the Middle East University, Amman, Jordan.

Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

Supplementary content related to this article has been published online at https://doi.org/10.1016/j.heliyon.2022.e08728.

Acknowledgements

The authors are grateful to the deaf participants who participated in the questionnaire.

References

Al-Abbas, L.S., Haider, A.S., 2021. Using Modern Standard Arabic in subtitling Egyptian comedy movies for the deaf/hard of hearing. Cog. Arts Human. 8 (1), 1993597.
Al-Adwan, A., 2009. Euphemism As A Politeness Strategy in Arabic Screen Translation, with Special Reference to Friends’. (Phd Dissertation). University of Manchester, United Kingdom.
Al-Salman, S., Haider, A.S., 2021a. COVID-19 trending neologisms and word formation processes in English. Russian J. Linguist. 25 (1), 24–42.
Al-Salman, S., Haider, A.S., 2021b. Jordanian university students’ views on emergency online learning during COVID-19. Online Learn. 25 (1), 286–302.
Aleksandrowicz, P., 2020. Can subtitles for the deaf and hard-of-hearing convey the emotions of film music? A reception study. Perspectives 28 (1), 58–72.
Almahase, Z., Mohsen, K., Omer, M., 2021. Faculty’s and students’ perceptions of online learning during COVID-19. Front. Educ.
Bawabaa, 2020. A Wave of Controversy over th’‘Netlix’ MSA Subtitling of ‘Elly Bally Balak Movie. Retrieved from https://bawabaa.org/uncategorized/261106/.
BBC, 2020. Netflix Gets 16 Million New Sign-Ups Thanks to Lockdown. Retrieved from https://www.bbc.com/news/business-52376022.
Broughton, M., 2018. deafness in the Arab World: a General Investigation, with Lebanon as a Case Study. Swarthmore College, Pennsylvania.
Cronbach, L.J., 1951. Coefficient alpha and the internal structure of tests. Psychometrika 16 (3), 297–344.
Debbas, M., Haider, A.S., 2020. Overcoming Cultural Constraints in Translating English Series: A Case Study of Subtitling Family Guy into Arabic’, 26. 3L: Language, Linguistics, Literature.
Díaz-Cintas, J., Remael, A., 2014. Audiovisual Translation: Subtitling. Routledge, London and New York.
El-Zaquiat, L., 2007. Assessing performance level of students who are deaf and hard-of-hearing in expressive writing skills in Jordan and its relation to some variables. Int. J. Educ. Res. 3 (4), 435–448.
El-Zaquiat, L., 2011. Assessing reading skills among hearing-impaired students in Jordan and its relation to some variables. Dinast Educ. Sci. 38.
El-Zaquiat, L., Al-Emam, M., 2005. The problems of students who are deaf and hard-of-hearing and its relation to some variables. J. Fac. Educ.-Al-Mansorah Univ. 2 (58), 155–181.
Gamal, M.Y., 2019. Audiovisual translation studies in the Arab world: the road ahead. In: Hanna, S., El-Farabaty, Hanem, Khalifa, Abdel-Wahab (Eds.), The Routledge Handbook of Arabic Translation. Routledge, London and New York, pp. 255–220.
Gambier, Y., 2003. Screen Transadaptation: Perception and Reception, 9. The Translator, pp. 171–189.
Gonzalez, L.P., 2009. Audiovisual translation. In: Baker, M., Saldanha, G. (Eds.), Routledge Encyclopedia of Translation Studies. Routledge, London, pp. 13–20.
Haider, A.S., Al-Salman, S., 2020. Dataset of Jordanian university students’ psychological health impacted by using E-learning tools during COVID-19. Data Brief 22.
Haile, L.M., Kameno, K., Briant, P.S., Orji, A.U., Steinmetz, J.D., Abdoli, A., et al. Ahmed, H., 2021. Hearing loss prevalence and years lived with disability, 1990–2019: findings from the Global Burden of Disease Study 2019. Lancet 397 (10278), 996–1009.
