

## ABSTRACT

### THE EFFECTS OF ENGLISH, ARABIC, AND NO SUBTITLES ON ARABIC ESL LEARNERS' LISTENING COMPREHENSION

Many studies have shown that English videos subtitled in English are more beneficial to ESL/EFL learners than English videos subtitled in the learners' native language. However, no such studies have looked at native Arabic speakers, nor have any looked at effects on learning. Therefore, this study looks at the effects of different subtitle types on the listening comprehension of ESL native speakers of Arabic. Specifically, the study examines the immediate effects (experiment 1) and short-term/learning effects (experiment 2) of three types of subtitling on listening comprehension: bimodal subtitling (English dialogue with English subtitles), standard subtitling (English dialogue with Arabic subtitles), and English dialogue with no subtitles. In experiment 1, 35 intermediate, advanced, and high-advanced ESL with Arabic L1 watched a short video in one of the three subtitling conditions and then completed a multiple-choice comprehension test. The bimodal (English) subtitles group scored better than the standard (Arabic) subtitles and no subtitles groups. In experiment 2, the same 35 participants watched an unsubtitled pretest video, 15 short videos, all in one of the same three subtitling conditions used in experiment 1 (randomly assigned), and then an unsubtitled posttest video, spread across 4 weeks. Following each video, all participants completed the same multiple-choice comprehension test. The bimodal (English) subtitles group showed greater improvement than standard (Arabic) subtitles and no subtitles groups.

Samia Faheed Alamri  
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THE EFFECTS OF ENGLISH, ARABIC, AND NO SUBTITLES  
ON ARABIC ESL LEARNERS' LISTENING  
COMPREHENSION

by  
Samia Faheed Alamri

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APPROVED

For the Department of Linguistics:

We, the undersigned, certify that the thesis of the following student meets the required standards of scholarship, format, and style of the university and the student's graduate degree program for the awarding of the master's degree.

\_\_\_\_\_  
Samia Faheed Alamri  
Thesis Author

\_\_\_\_\_  
Michael Shepherd (Chair) Linguistics

\_\_\_\_\_  
Xinchun Wang Linguistics

\_\_\_\_\_  
Sean Fulop Linguistics

For the University Graduate Committee:

\_\_\_\_\_  
Dean, Division of Graduate Studies

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## CHAPTER 1: INTRODUCTION

Listening comprehension is a very important skill for second language learners, and language teachers tend to use audio–visual materials, such as television and movies, to help learners improve their listening (Canning-Wilson, 2000; Kothari, Pandey, & Chudgar, 2004; Lewis & Anping, 2002; Ryan, 1998; Weyer, 1999). Subtitles are also a tool used to develop the listening comprehension skill of ESL/EFL learners, and learners have been shown to benefit from this combination of visual information and speech in improving their comprehension (Abdellah, 2008; Richards & Gordon, 2004).

Subtitles are a written version of a film’s dialogue that appears on screen (Gerzymisch-Arbogast, 2008). Zanón (2006) distinguished among three types of subtitling used with language learners: bimodal subtitling, which displays a written version of the (target-language) dialogue (e.g., English dialogue with English subtitles); standard subtitling, which displays a translation of the (target-language) dialogue into the first language of the listeners; and reversed subtitling, which displays a target-language translation of native-language dialogue. Katchen, Fox, Lin, and Chun (2001) mentioned three additional types: bilingual (target-language audio with both native- and target-language subtitles), bilingual reversed (native-language audio with native- and target-language subtitles), and no subtitling (target-language audio only).

Subtitles help clarify speech, thus providing language learners with significant quantities of authentic and understandable input (Vanderplank, 1988). As for the different types of subtitling, some research has found standard subtitling (target-language audio and native-language subtitles) to be anathema to improving listening comprehension (Robin, 2007). For that reason, many language teachers

prefer bimodal subtitling (target-language audio and target-language subtitles). However, the issue of best practices in the use of subtitled films remains unresolved, and many teachers are not sure whether films with or without subtitles and in the target or native language are most helpful to learners' listening comprehension (Hayati & Mohmedi, 2011).

### 1.1 Thesis Outline

The remainder of this thesis is organized as follows. Chapter 2 is the literature review, which includes previous studies, the goals of the thesis, and the research questions. Chapter 3 covers the methods of the two experiments, including participants, materials, and procedures. Chapter 4 presents and discusses the results of the study. Chapter 5 provides a brief conclusion.

## CHAPTER 2: LITERATURE REVIEW

Many studies favor the use of subtitled videos in teaching language learners (Guichon & McLornan, 2008; Hayati & Mohmedi, 2011; Lwo & Lin, 2012; Markham & Peter, 2003; Mitterer & McQueen, 2009; Winke, Gass, & Sydorenko, 2010). Among these, some have compared the effects of bimodal subtitles (target-language audio and target-language subtitles) vs. no subtitles (Winke et al., 2010). Others have compared the effects of bimodal subtitles vs. standard subtitles (target-language audio and native-language subtitles) vs. no subtitles (Hayati & Mohmedi, 2011; Markham & Peter, 2003; Mitterer & McQueen, 2009). One study even compared bimodal subtitles, standard subtitles, bilingual subtitles (target-language audio with both target-language and native-language subtitles), and no subtitles (Lwo & Lin, 2012). Lastly, one study compared bimodal subtitles, standard subtitles, no subtitles, and audio alone (Guichon & McLornan, 2008). Each of these studies is discussed in more detail below.

Winke et al. (2010) compared the effects of bimodal subtitling (target-language audio and target-language subtitles) vs. no subtitling on listening comprehension. A total of 152 second- and fourth-year learners of Chinese, Arabic, Spanish, and Russian participated in this study. The results, which were measured by *t*-tests and two-way ANOVAs, showed that those who saw the subtitled versions of the videos performed better on comprehension tests than those who saw the videos with no subtitles.

Hayati and Mohmedi (2011) examined the subtitles' effects on the listening comprehension of 90 intermediate EFL students. The students were shown six short videos in English in one of three conditions: bimodal (English) subtitles, standard (Persian) subtitles, or no subtitles. After each viewing session, six

multiple-choice questions were used to examine learners' listening comprehension. The bimodal (English) subtitle group scored higher on the comprehension tests than the standard (Persian) subtitle group, indicating again that target language subtitles are better for listening comprehension than standard subtitles or no subtitles.

Markham and Peter (2003) investigated how the use of bimodal subtitles (English audio with English subtitles), standard subtitles (English audio with Spanish subtitles), and no subtitles affected listening comprehension of 213 intermediate-level ESL learners with Spanish L1. Comprehension was tested with 20 multiple-choice questions (in Spanish). The results showed better listening comprehension with bimodal subtitles than with other types.

Mitterer and McQueen (2009) presented 121 Dutch participants who had good English comprehension skills with two videos in unfamiliar regional accents of English (Scottish and Australian). The videos were shown with bimodal (English) subtitles, standard (Dutch) subtitles, or no subtitles. Participants were then presented with novel audio fragments in each accent and asked to repeat them back. Participants who saw the original videos with bimodal (English) subtitles performed better than those who saw the videos with no subtitles. Those who saw the videos with no subtitles, in turn, performed better than those who saw the videos with standard (Dutch) subtitles. Again, this suggests that first language subtitles create lexical interference, while the target language subtitles improve comprehension.

Most recently, Lwo and Lin (2012) compared the effects of bimodal subtitles, standard subtitles, no subtitles, and bilingual subtitles on the English listening comprehension of 32 eighth graders with Mandarin L1. The results

revealed that bimodal or bilingual subtitles helped comprehension more than standard subtitles or no subtitles.

Guichon and McLornan (2008) investigated the effects of multimodality on second language comprehension. An experiment was designed to compare the understanding of a video in English by four groups of 10 French undergraduate students (a total of 40). The first group received audio only, the second group received subtitled audio video, the third group received audio and video with standard subtitles, and the last group received audio and video with bimodal subtitles. The participants were asked to summarize the material in English and were allowed to refer to their notes. The results revealed better comprehension when learners received bimodal subtitles vs. standard subtitles, a finding that the authors attribute to the standard subtitles' causing lexical interference.

Lastly, it must be noted that some studies have highlighted certain drawbacks to the use of any subtitles in language learning contexts. In particular, Diaz-Cintas and Remael (2007) found that reading subtitles while watching a video can cause learners to miss important visual information.

### 2.1 Aims of the Current Study

There has been no research on the effects of different types of subtitling on the listening comprehension of Arabic L1 learners of English. My literature search also found no research on longer-term effects of different subtitle types on listening comprehension. These two gaps in the literature are addressed in experiments 1 and 2, respectively. Experiment 1 examines the immediate effect of standard subtitles, bimodal subtitles, and no subtitles on Arabic L1 speakers' comprehension of an English video clip. Experiment 2 uses a modified pretest–

posttest design to test whether different subtitle types have a measurable effect on listening comprehension in a short-term (4-week) learning scenario.

## 2.2 Research Questions

### Experiment 1

Which subtitling condition – bimodal, standard, or unsubtitled – most facilitates listening comprehension for native speakers of Arabic watching English videos in the immediate term?

### Experiment 2

Which subtitling condition – bimodal, standard, or unsubtitled – leads to the greatest improvement in listening comprehension for native speakers of Arabic watching English videos in a short-term (4-week) learning scenario?

### Experiments 1 and 2

Does English proficiency level affect the relative benefits of the different types of subtitling in either the immediate or short term?

## CHAPTER 3: METHODOLOGY

This study consisted of two experiments examining the effects of bimodal (English) subtitling, standard (Arabic) subtitling, or no subtitling on the listening comprehension of ESL learners with Arabic L1. Experiment 1 tested the immediate effects of the different types of subtitling, whereas experiment 2 examined their effects across a short-term (4-week) learning scenario.

### 3.1 Experiment 1

#### 3.1.1 Participants

A total of 35 Arabic speakers completed experiment 1. The first 17 were recruited from an intensive English program in the Central Valley of California (8 intermediate, 9 advanced). The participants' English proficiency levels were based on an online placement test they took before they started the program. These participants ranged in age from 18-24 years (mean = 20.1 years). They had been learning English for 6-10 years (mean = 8 years) and had been in the U.S. for 3 months to 2 years.

Following preliminary analysis of the institute students' data (detailed below), another 18 high-advanced participants were recruited from U.S. universities ( $n = 11$ ) and from Saudi universities ( $n = 7$ ). The U.S. university participants ranged in age from 20-29 (mean = 24.5 years) and had been learning English for 9-13 years (mean = 11 years). They had been experiencing English in the United States for 3 to 5 years. The Saudi university participants ranged in age from 21-28 (mean = 24.5 years) and had been taking English classes for 7-11 years (mean = 9 years). The Saudi university participants were exposed to English daily through movies, social media, songs, etc. The U.S. and Saudi university

participants' English proficiency was considered high-advanced because they had been learning English longer than the institute participants.

### 3.1.2 Materials

The material used in this study was a 5-minute English-language TED Talk video entitled “Why Lunch Ladies Are Heroes,” by Jarrett J. Krosoczka (2014). The video was presented in three conditions – bimodal (English) subtitles, standard (Arabic) subtitles, and no subtitles – all as supported by the TED website ([www.ted.com](http://www.ted.com)). In the video, Krosoczka talked about the origins of his “Lunch Lady” graphic novel series. Comprehension was measured using a listening comprehension test developed by the researcher consisting of seven multiple-choice questions, each with three response choices (see Appendix A).

### 3.1.3 Procedure

The participants were emailed a link to one of the three versions of the Qualtrics study. The versions were identical except the TED Talk video was presented with bimodal (English) subtitles, standard (Arabic) subtitles, or without subtitles. Eighteen high-advanced students, nine advanced-level students, and eight intermediate-level students watched the video once in a randomly assigned condition. Ten watched the video with bimodal (English) subtitles (high-advanced = 5, advanced = 3, intermediate = 2). Thirteen watched it with standard (Arabic) subtitles (high-advanced = 7, advanced = 3, intermediate = 3). And 12 watched it without subtitles (high-advanced = 6, advanced = 3, intermediate = 3). After watching the video, all participants answered the same seven multiple-choice questions to test their listening comprehension (see Appendix A). The entire study was conducted online via Qualtrics (Qualtrics, 2016).

## 3.2 Experiment 2

### 3.2.1 Participants

The same 35 participants that completed experiment 1 also completed experiment 2.

### 3.2.2 Materials

The materials used in experiment 2 consisted of 17 additional English-language TED Talk videos (see Table 1). Comprehension of each of the 17 videos was measured using 1 of 17 additional listening comprehension tests developed by the researcher. Each test consisted of five multiple-choice questions, each with three response choices (see Appendix B).

### 3.2.3 Procedure

Experiment 2 was conducted in three phases – pretest, treatment, and posttest – during a period of 17 days, spread across 4 weeks with a 4 daily sessions per week. During the initial (pretest) session, the participants watched the (unsubtitled) pretest video and completed the pretest, which consisted of five multiple-choice questions (see Appendix B).

During the 15 treatment sessions, the participants watched the 15 treatment videos (one each day during four weekly sessions) in their randomly assigned subtitle condition. Specifically, 12 participants watched the videos with bimodal (English) subtitles (high-advanced = 6, advanced = 3, intermediate = 3), 12 watched them with standard (Arabic) subtitles (high-advanced = 6, advanced = 3, intermediate = 3), and 11 watched them without subtitles (high-advanced = 6, advanced = 3, intermediate = 2). After watching each video, all participants completed the corresponding five multiple-choice comprehension questions (see Appendix B).

Table 1

*List of Videos Used in Experiment 2*

Session	Video Name	Speaker	Year
Pretest	“Remember to say thank you”	Laura Trice	2008
Treatment 1	“Success is a continuous journey”	Richard St. John	2009
Treatment 2	“Keep your goals to yourself”	Derek Sivers	2010
Treatment 3	“A circle of caring”	Jok Church	2011
Treatment 4	“Try something new for 30 days”	Matt Cutts	2011
Treatment 5	“A father-daughter bond, one photo at a time”	Steven Addis	2012
Treatment 6	“Got a meeting? Take a walk”	Nilofer Merchant	2013
Treatment 7	“Photos that give voice to the animal kingdom”	Frans Lanting	2014
Treatment 8	“404, the story of a page not found”	Renny Gleeson	2012
Treatment 9	“Talk nerdy to me”	Melissa Marshall	2012
Treatment 10	“A 12-year-old app developer”	Thomas Suarez	2011
Treatment 11	“How to succeed? Get more sleep”	Arianna Huffington	2011
Treatment 12	“Teach statistics before calculus!”	Arthur Benjamin	2009
Treatment 13	“Life lessons through tinkering”	Gever Tulley	2009
Treatment 14	“Stephen Hawking's zero g flight”	Peter Diamandis	2008
Treatment 15	“Why is ‘X’ the unknown?”	Terry Moore	2012
Posttest	“The technology of storytelling”	Joe Sabia	2011

After the treatment phase was done, all participants completed the posttest, which consisted of watching the (unsubtitled) posttest video and completing the posttest, which had five multiple-choice questions (see Appendix B).

## CHAPTER 4: RESULTS AND DISCUSSIONS

### 4.1 Experiment 1

In experiment 1, participants were divided into three subtitling condition groups – bimodal (English), standard (Arabic), or no subtitles – such that each group included roughly equal numbers of intermediate, advanced, and high-advanced students. Then, all of them were asked to watch a video and answer a seven multiple-choice comprehension questions.

A two-way ANOVA (subtitle type  $\times$  English proficiency level) was conducted in SPSS. The analysis revealed a significant main effect of subtitle type,  $F(2, 23) = 6.47, p = .006$ . The main effect of English proficiency level (intermediate, advanced, Saudi University, or US University), however, was not significant  $F(3, 23) = 2.56, p = .080$ , nor was the interaction between subtitle condition and English proficiency level,  $F(6, 23) = .39, p = .873$ . Post-hoc comparisons examining the main effect of subtitle condition showed that bimodal (English) subtitles led to significantly higher listening comprehension scores than standard (Arabic) subtitles,  $p = .001$ , or no subtitles,  $p = .003$ . The difference between standard (Arabic) subtitles and no subtitles was not significant,  $p = .782$ . For a summary of the raw data, see Table 2.

The results of experiment 1 show that bimodal (English) subtitling is better for Arabic L1 ESL learners' immediate listening comprehension than standard (Arabic) subtitling or no subtitling, consistent with previous research on learners with other language backgrounds. In fact, the results suggest that standard (Arabic) subtitling is, statistically speaking, no better than no subtitling for Arabic L1 ESL learners' listening comprehension. Note, however, that these results do not indicate an effect on learning, which is a longer-term process.

Table 2

*Participants' Scores from Experiment 1*

Condition	English Level	Participants ( <i>n</i> )	Mean Score (SD)
English subtitle	US Universities	3	6.67 (0.58)
English subtitle	SA Universities	2	6.50 (0.71)
English subtitle	Advanced	3	6.67 (0.58)
English subtitle	Intermediate	2	4.00 (0.00)
Arabic Subtitle	US Universities	4	3.25 (1.71)
Arabic Subtitle	SA Universities	3	4.33 (0.58)
Arabic Subtitle	Advanced	3	4.33 (2.08)
Arabic Subtitle	Intermediate	3	1.67 (2.89)
No Subtitle	US Universities	4	3.50 (1.73)
No Subtitle	SA Universities	2	5.00 (1.41)
No Subtitle	Advanced	3	3.33 (2.31)
No Subtitle	Intermediate	3	3.00 (2.65)

That effect was explored in experiment 2 and will be discussed in the next section. The results also show, not surprisingly, that participants with higher English proficiency levels have better listening comprehension skills. Crucially, though, English proficiency level does not interact with subtitle condition, a result that can be interpreted as meaning that learners at various levels can benefit from bimodal (English) subtitled videos.

#### 4.2 Experiment 2

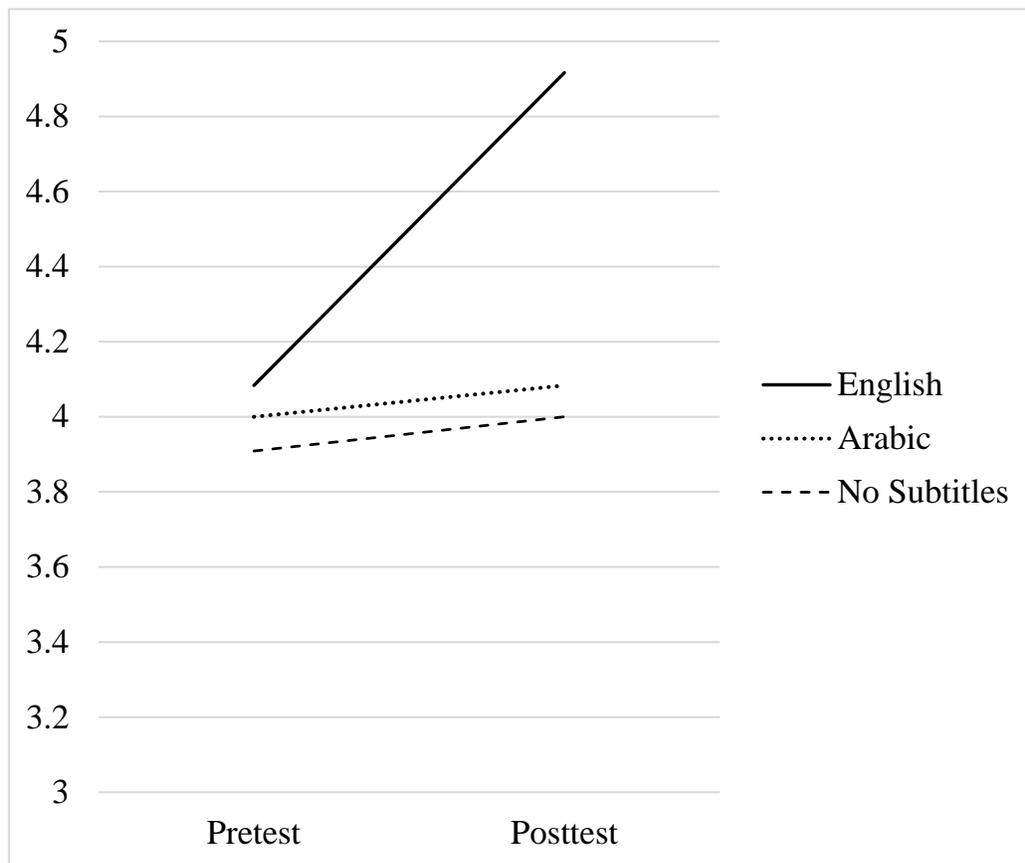
The tasks in experiment 2 consisted of a pretest, 15 treatments, and a posttest. In the pretest, all participants were asked to watch an unsubtitled video and complete a five-question, multiple-choice comprehension test. During the

treatment phase, the participants were again divided into three subtitling condition groups – bimodal (English), standard (Arabic), or no subtitles – such that each group included roughly equal numbers of intermediate, advanced, and high-advanced students. Then, all of them were asked to watch a video and complete a five-question, multiple-choice comprehension test. Finally, in the posttest, all participants were asked to watch another unsubtitled video and complete another five-question, multiple-choice comprehension test.

A three-way ANOVA (pretest/posttest  $\times$  subtitle type  $\times$  English proficiency level) with pretest/posttest as a repeated measure was conducted in SPSS. The results showed that participants' posttest comprehension scores were significantly higher than their pretest scores,  $F(1, 23) = 4.41, p = .047$ . Moreover, the analysis showed a significant interaction between pretest/posttest comprehension scores and subtitle condition,  $F(2, 23) = 4.07, p = .031$ , with participants in the bimodal (English) subtitle condition showing greater gains than those in the other two conditions (see Figure 1).

These results show that bimodal (English) subtitling not only improves immediate listening comprehension, but that repeated exposure to bimodal (English) subtitled videos leads to significant improvements in listening comprehension, even given a relatively short treatment period. This learning effect of bimodal (English) subtitling had not been shown in any of the previous studies reviewed in connection with this research, and has important implications for ESL learners.

The analysis also revealed significant main effects of subtitle condition,  $F(2, 23) = 4.80, p = .018$ , and English proficiency level,  $F(3, 23) = 5.73, p = .004$ . Looking more closely into the main effect of subtitle condition, post-hoc comparisons showed that bimodal (English) subtitles, in particular, led to



*Figure 1.* Mean comprehension scores (Y-Axis) from the pretest to the posttest (X-Axis) for all three conditions

significantly higher posttest scores than standard (Arabic) subtitles,  $p = .022$ , or no subtitles,  $p = .009$ . The difference between standard (Arabic) subtitles and no subtitles was not significant,  $p = .652$ . This suggests that intermediate and higher level Arabic L1 ESL learners should stop viewing videos with standard (Arabic) subtitles or without subtitles and use bimodal (English) subtitles instead.

As for the main effect of English proficiency level, post-hoc comparisons showed that comprehension scores of intermediate English institute students and advanced English institute students were statistically equal,  $p = .853$ . Likewise, comprehension scores of U.S. university students and Saudi University students were also statistically equal,  $p = .839$ . However, comprehension scores of the two

groups of university students were significantly higher than those of the two groups of institute students, with pairwise  $p$ -values range from .006 to .014 (see Table 3).

Table 3

*Participants' p-Values from Experiment 2*

Pairwise comparison	$p$ -Value
U.S. university vs. advanced	.006
Saudi university vs. advanced	.008
U.S. university vs. intermediate	.012
Saudi university vs. intermediate	.014

As in experiment 1, there was no significant interaction between participants' English proficiency level and subtitle type in their effect on comprehension scores,  $F(3, 23) = 1.72, p = .192$ . Again, this result is interpreted as meaning that learners at various levels can benefit from bimodal (English) subtitled videos.

## CHAPTER 5: CONCLUSIONS

Listening comprehension is an important skill for ESL learners that can be developed in different ways, including viewing subtitled videos. Research suggests that bimodal subtitles (subtitles in the same language as the audio) are the most helpful for language learners. There was no previous research, however, on Arabic L1 learners of English. Moreover, existing studies had focused on immediate effects of the different subtitle types on comprehension and had not attempted to show their impact on learning. This study investigates which type of subtitles – bimodal (English), standard (Arabic), or none – has the most positive effect on Arabic L1 ESL learners' listening comprehension in the immediate (experiment 1) and short (experiment 2) terms.

The results of experiment 1 show that bimodal (English) subtitles are the most beneficial Arabic L1 ESL learners, regardless of their English proficiency levels. Likewise, the experiment 2 reveals that bimodal (English) subtitles are the best for improving Arabic L1 ESL learners' listening comprehension in the short term.

To conclude, bimodal (English) subtitling affects Arabic L1 ESL learners' listening comprehension positively. Therefore, ESL teachers should use bimodal (English) subtitles when they present English videos in their classrooms. This practice will help ESL learners improve their English listening comprehension.

### 5.1 Limitations and Directions for Future Studies

One limitation of this study is that participants' English proficiency levels are limited to intermediate, advanced, and high-advanced. It would be interesting to include lower level participants to make a comparison among additional levels. Another limitation is the number of participants. Although data proved sufficient

to obtain statistically significant results, the more participants we have, the more robust the results will be.

Moreover, the present studies were limited to participants with normal hearing. It would be interesting, in future studies, to include participants who have hearing disabilities but at least some hearing ability. This would help develop our knowledge about best practices in working with such students. Lastly, the second experiment, which demonstrated a learning effect, was relatively short term (4 weeks). For future studies, measuring longer-term learning effects would be preferred, to see the effects of a longer training period but also to see how the learning effects change over time after the training ends.

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## APPENDICES

APPENDIX A: EXPERIMENT 1 COMPREHENSION  
QUESTIONS

Comprehension Questions

- 1) Who is “Stephen Krosoczka”?
  - a) The presenter uncle’s
  - b) The presenter
  - c) The presenter’s father
- 2) What had inspired the presenter’s imagination to create the Lunch Lady graphic novel series?
  - a) How his lunch lady had recognized him after many years and told him about her grandkids.
  - b) The love he had toward his old lunch lady.
  - c) His old lunch lady told him to do so.
- 3) What is the Lunch Lady graphic novel series talk about?
  - a) Lunch lady fights in order to serve the justice.
  - b) Lunch lady fights off a bad guy.
  - c) Lunch lady fights off the evil cyborg substitutes, a school bus monster and a bad guy at the end kills her.
- 4) Why did all the lunch ladies tell the presenter "Thank you for making a superhero in our likeness"?
  - a) Because he made students super heroes.
  - b) Because he told the kids how to treat their lunch ladies well.
  - c) Because the lunch ladies have not been treated kindly among cultures over time.
- 5) What is School Lunch Hero Day?
  - a) A day that children vote for best lunch ladies they have at their schools
  - b) A day where kids can make creative projects for their lunch staff.

- c) A day for students to cook instead of their lunch staff.
- 6) What is the reason behind creating School Hero Day?
- a) How the presenter's appreciation of his old lunch lady's hard work had meant so much to her.
  - b) The death of his old lunch lady and how sad he was at her funeral.
  - c) His old lunch lady's husband told him to do so.
- 7) The presenter ended his talk by:
- a) Reminding audience the power of thank you.
  - b) Crying and thanking the audience for coming.
  - c) Praying for and thanking his old lunch lady.

APPENDIX B: EXPERIMENT 2 COMPREHENSION  
QUESTIONS

Pretest Comprehension Questions:

- 1) The speaker in the last few years has:
  - a) started saying thank you to people.
  - b) stopped saying thank you to people.
  - c) been waiting for someone to thank her.
- 2) What is the main idea of the speaker's speech?
  - a) Changing the world with peaceful ideas and behavior.
  - b) Behave nicely to family, friends, daughters, and sons.
  - c) Ask others for our needs and ask them what they want and need.
- 3) Why do some fathers avoid saying how proud they are of their sons?
  - a) They do not know that their sons needed to hear that.
  - b) They do not care about their sons' feelings.
  - c) They are afraid to say that to their sons.
- 4) Why did the man in the speaker's story thank his wife for the things she did in the house and with the kids?
  - a) Because she asked him to do it.
  - b) Because he always thanked her for things.
  - c) Because he was mocking her.
- 5) What did the speaker mean when she said to the audience, "So, I'm going to challenge all of you. I want you to true your wheels..."?
  - a) Begin a new life.
  - b) Tell people what you need to hear and ask people what they need to hear.
  - c) Be honest about themselves and tell people about their interests.

Treatment 1 ComprehensionQuestions:

- 1) Why do so many people reach success and then fail?
  - a) Because they think that success is a two-way street.
  - b) Because they stop doing what made them successful.
  - c) Because they continue doing what made them successful.
- 2) How did the speaker remove the black cloud that he used to have?
  - a) By having money and buying a fast car
  - b) By becoming as successful as he used to be
  - c) Prozac
- 3) Why did the speaker's business grow bigger than it used to be at the end?
  - a) Because the speaker did the things that made him successful originally.
  - b) Because he engaged with his employees in doing projects they love.
  - c) Because only he and his partner were left at the company.
- 4) Which one of the following is not one of the eight principles for success?
  - a) Working hard
  - b) Coming up with new and good ideas
  - c) Focusing on money and ignoring passion
- 5) What is the speaker's main goal in this speech?
  - a) Money cannot buy happiness.
  - b) Success is an endless journey and the eight principles he mentioned lead to success, too.
  - c) Success is achieved alone, without depending on any employees or managers.

## Treatment 2 Comprehension

### Questions

- 1) Why it is good not to tell anyone what your goals are?
  - a) Because telling someone about your goal makes it more likely to happen.
  - b) Because the person you tell might make you less happy and lead you to change your goals.
  - c) Because telling someone about your goals makes them less likely to be realized.
- 2) What does “social reality” mean psychologically?
  - a) When others know what your goals are, they become real in your mind and you will be less motivated to achieve them.
  - b) Hiding a goal in your mind and trying not to tell others about it in order to achieve it.
  - c) Telling people about a goal in order to ask them for help.
- 3) What is a good way to tell someone about a goal if you really need to?
  - a) Tell it as if it is someone else’s goal.
  - b) Say it in a funny way.
  - c) Say it without being satisfied with it.
- 4) What did the speaker ask the audience at the beginning of the talk?
  - a) Not to state their goals to others until they have achieved them.
  - b) To say their goals out loud.
  - c) To imagine announcing their goals to others and feeling the satisfaction.
- 5) The idea of not telling anyone about your goals goes against:
  - a) Conventional wisdom
  - b) Being a sociable person
  - c) Helping others

Treatment 3 ComprehensionQuestions

- 1) What was the speaker's talk mainly about?
  - a) Circles
  - b) Epiphanies
  - c) Both a & b
- 2) Why did the teacher in the speaker's story call him in the middle of night?
  - a) She needed his and his partner's help because she was sick.
  - b) She needed to meet him for fun.
  - c) She needed to meet the man that he had found.
- 3) What does epiphany mean in the speaker's speech?
  - a) A type of terminal cancer
  - b) Death is part of life
  - c) Friendship remains always the same for years
- 4) What happened to the speaker's teacher at the end of the story?
  - a) She remained sick
  - b) She got well with the help of the speaker's partner.
  - c) She died
- 5) Why did the speaker care about his teacher?
  - a) Because she was one of his best friends.
  - b) Because she asked him to.
  - c) Because she saved him from bullies for three years when he was at the school.

Treatment 4 ComprehensionQuestions

- 1) What did the speaker do to refresh his life?
  - a) He decided to try one new thing for 30 days
  - b) He decided to sell a novel for 30 days
  - c) He decided to try one new thing each day for 30 days.
- 2) What did the speaker gain from the challenges he mentions in his talk?
  - a) Self confidence
  - b) Writing many novels
  - c) A chance to meet John Hodgman at a TED party
- 3) What is the speaker's idea about experiencing small challenges and big challenges?
  - a) Small challenges do not stick, while big challenges do.
  - b) Small challenges are more likely to stick than big challenges.
  - c) Small challenges are more fun than big challenges.
- 4) How is it possible to write a novel in 30 days as the speaker described?
  - a) By writing 1,667 words per day for 30 days
  - b) By working on it for a few hours before going to sleep every day for a month.
  - c) By working on it all day long for a month.
- 5) According to the speaker, how long does it take to develop a new habit?
  - a) 30 months
  - b) 30 days
  - c) 30 weeks

Treatment 5 ComprehensionQuestions

- 1) Who took the 15 photos for the speaker and his daughter?
  - a) The speaker's wife
  - b) 15 random tourists
  - c) His wife took 1 and random tourists took the other 14
- 2) When did the speaker get the idea of having 15 pictures taken by random tourists?
  - a) When he was in New York on his daughter's 1st birthday.
  - b) On his daughter's 3rd birthday in New York.
  - c) When he was in Chicago for his 1st anniversary
- 3) What are the changes the speaker mentions that he noticed in the 15 photos?
  - a) Physical and perspective changes
  - b) Psychological changes
  - c) No changes (everything remained the same)
- 4) What did the speaker try to encourage the audience to do at the end of his talk?
  - a) Take family trips
  - b) Create memories through photography
  - c) Keep their memories in their minds, rather than in pictures
- 5) What is the most important thing the speaker got from taking the 15 shots?
  - a) He learned how to ask strangers to take pictures for him.
  - b) Memories
  - c) His family's love

Treatment 6 ComprehensionQuestions

- 1) What did the speaker mean when she said, “Sitting has become the smoking of our generation”?
  - a) Sitting is enjoyable.
  - b) Sitting is killing our generation.
  - c) Sitting is a habit for our generation.
- 2) What negative health consequences come from lack of physical activity?
  - a) Heart disease and diabetes
  - b) Breast and colon cancer
  - c) Both a and b
- 3) Who inspired the speaker to change her lifestyle?
  - a) Someone who invited her for a walking meeting.
  - b) Someone who invited her for a coffee meeting.
  - c) Someone who invited her to a conference room meeting.
- 4) What are the positive consequences of the speaker’s experience?
  - a) Helping her solve several types of issues.
  - b) Helping her meet new friends.
  - c) Helping her relax.
- 5) What was the speaker’s advice to the audience at the end?
  - a) Talk and walk.
  - b) Talk after having a walk.
  - c) Walk after having a talk to refresh their minds.

Treatment 7 ComprehensionQuestions

- 1) Who did the speaker concentrate on during his talk?
  - a) People
  - b) Animals
  - c) Both a and b
- 2) What inspired the speaker to photograph animals?
  - a) The understanding that all animals are one
  - b) Jimmy Smith
  - c) Their scales, fur, and feathers
- 3) When was the last time animals were mentioned in Jimmy's story?
  - a) When a human came and killed them all
  - b) Years ago when Jimmy went to their caves
  - c) When a human came into their cave and laughed at what he saw.
- 4) What is the speaker's main goal in taking eye-to-eye photos of animals?
  - a) To connect humans with animals
  - b) To discover the secrets in the animals' eyes
  - c) To become friends with the animals
- 5) At the end of the talk, what did the speaker tell the audience to do in life as human beings?
  - a) Try to deal with animals.
  - b) Deal with life diversity and be united.
  - c) Take care of forests and animals.

## Treatment 8 Comprehension

### Questions

- 1) What did the speaker try to tell the audience?
  - a) A lesson that he learned from a 404 page
  - b) What a 404 page is
  - c) Where a 404 page comes from
- 2) What is a 404 page?
  - a) It is a fixed experience on the web.
  - b) It is a page that companies can do marketing through.
  - c) It is a default page when you ask about a non-found page on the web.
- 3) Dailpath exploits a 404 page to:
  - a) Show advertisements
  - b) Educate audiences
  - c) Tell funny jokes
- 4) Why did Athletepath include the funny video, which is displayed during the speaker's talk, on one of their 404 pages?
  - a) To match the bad feelings that users have when they get a 404 page
  - b) To entertain people until the page can be fixed
  - c) To teach people the steps to fix the 404 page
- 5) Where does a 404 page come from?
  - a) A number of different errors combined together
  - b) Wi-Fi errors
  - c) A centralized website that is responsible for all 404 pages

Treatment 9 ComprehensionQuestions

- 1) Which of the following is a key that scientists and engineers use to engage non-scientists in their science?
  - a) Show them why their science is relevant to the non-scientists' world
  - b) Give them the opportunity to participate in a science class
  - c) Advise them to read about their science
- 2) What is the basic way non-scientists deal with scientists and engineers?
  - a) Having a big brain
  - b) Having great communication skills
  - c) Using science and engineering as guides
- 3) Why did the speaker call the listed points in scientists' and engineers' presentations "bullet points"?
  - a) Because they make the presentation more powerful
  - b) Because they kill the presentation
  - c) Because they add more details to the presentation
- 4) What is the result of the equation that the speaker presented at the end of her talk?
  - a) Getting incredible interaction and understanding
  - b) Complicating scientific communication skills
  - c) Improving nerdy talk
- 5) What does the speaker mean by "talk nerdy to us"?
  - a) Having a complex communication style
  - b) Teaching the steps to become a nerd
  - c) Having scientific conversations with non-scientists

Treatment 10 Comprehension  
Questions

- 1) The speaker's second app is?
  - a) The Bustin Jieber App
  - b) The Earth Fortune App
  - c) The Programming App
- 2) What was the first thing the speaker did to start creating his apps?
  - a) Downloading Java
  - b) Learning programming languages
  - c) Buying language apps
- 3) Which of the following is one of the speaker's goals for the future?
  - a) Become an Android programming sponsor
  - b) Continue working in his app club at school
  - c) Buy more apps
- 4) Who inspired the speaker to start creating apps?
  - a) Family, teachers, and friends
  - b) People at Apple store
  - c) Steve Jobs
- 5) How did the speaker decide which apps should be iPads at school?
  - a) Getting feedback from teachers to see which apps they would like to have.
  - b) Connecting with the Apple store to get more information about educational apps.
  - c) Gathering with friends to see which apps they need to have.

Treatment 11 ComprehensionQuestions

- 1) For which sex is sleep deprivation a sign of virility, as the speaker mentioned?
  - a) Women
  - b) Men
  - c) a and b
- 2) Why did the speaker add sisters, who sleep for 7-8 hours, to the story of the Lehman Brothers, who are hyper-connected 24/7?
  - a) To entertain the audience
  - b) To prove that having enough sleep could make life more positive
  - c) To show the audience how much women and men sleep
- 3) How did the speaker end her talk?
  - a) By telling people to get enough sleep so they can see how it makes their lives better
  - b) By informing the audience that too much sleep can lead to failure
  - c) By giving some tips about how to finish work on time and get few extra hours of sleep
- 4) Why does having a high I.Q. not necessarily mean being a good leader?
  - a) Because smart leaders sleep too much and do nothing except lead people
  - b) Because leadership requires enough sleep to develop a powerful mind
  - c) Because a high I.Q. drives people to ask too many questions
- 5) When did the speaker start to care about the value of sleep?
  - a) When she read an article about it
  - b) When a friend told her about it
  - c) When she fainted from exhaustion

Treatment 12 Comprehension  
Questions

- 1) Which of the following must be used on a daily basis?
  - a) Calculus
  - b) Statistics
  - c) Both a and b
- 2) What is the main point of the speaker's talk?
  - a) The study of calculus should be replaced with statistics and probability.
  - b) Statistics is too difficult for high school students.
  - c) Statistics is less important than other areas of mathematics.
- 3) Why is calculus important?
  - a) All scientific majors require it.
  - b) The laws of nature are written in the language of calculus.
  - c) Both a and b
- 4) What could help Americans get out of the economic mess that they are in today?
  - a) Learning statistics and probability
  - b) Teaching mathematics in creative ways
  - c) Focusing on teaching calculus productively
- 5) What are probability and statistics, as the speaker explained them in his talk?
  - a) Analyzing trends
  - b) Counting numbers
  - c) Measuring student learning

Treatment 13 Comprehension  
Questions

- 1) What do kids do when they face complexities related to unfinished projects?
  - a) Kids call their managers for help
  - b) Kids decorate them
  - c) Kids repeat the projects in order to fix the problems step by step
- 2) What do kids learn from this school?
  - a) Failure is analyzed, problems are solved, and success is coming.
  - b) Plans must be executed successfully from the beginning.
  - c) Building does not require tools from nature.
- 3) What do the speaker and Robin do at the school?
  - a) They keep the kids' projects going.
  - b) They keep an eye on the kids.
  - c) They teach the kids how to build.
- 4) What is the school's main goal?
  - a) For kids to get ideas about nature
  - b) For kids to learn to make things out of nothing
  - c) For kids to have an idea about what engineering is.
- 5) What is Tinkering School?
  - a) A school where kids have dangerous tools like hammers and learn how to use them positively.
  - b) A school that teaches kids engineering subjects.
  - c) A school that prepares kids in the summer with engineering curriculum and tests.

Treatment 14 ComprehensionQuestions

- 1) Why did Hawking want to take a parabola flight?
  - a) To entertain himself
  - b) To encourage people's interest in space
  - c) To be the first one to try it
- 2) What was Hawking's dream?
  - a) To travel into space
  - b) To get on an airplane
  - c) To experience zero-g
- 3) What did the speaker do to make Hawking's dream come true?
  - a) He took him to experience weightlessness.
  - b) He took him into space.
  - c) He made him a movie about space and the universe.
- 4) What does parabolic flight mean?
  - a) Flying in an airplane full of doctors and nurses.
  - b) Taking an airplane up and then coming down very quickly.
  - c) A flight with all of the equipment needed to discover the universe.
- 5) How many parabolas did Hawking do?
  - a) One
  - b) Three
  - c) Eight

Treatment 15 Comprehension  
Questions

- 1) When did the speaker decide to learn Arabic?
  - a) 6 months ago
  - b) 6 years ago
  - c) 16 years ago
- 2) Why did the speaker find it difficult to learn Arabic?
  - a) Because it is not his native language.
  - b) Because every part of it is precise and conveys a lot of information.
  - c) Because it includes some engineering and mathematics symbols.
- 3) What is algebra?
  - a) It is a statistical term discovered by a European.
  - b) It is an equation solved by Arabs 600 years ago.
  - c) It is a system for reconciling disparate parts.
- 4) Why was it difficult to translate the mathematical wisdom that is contained in Arabic texts into European languages?
  - a) Because some Arabic sounds are very difficult for Europeans.
  - b) Because Europeans cannot learn to pronounce Arabic sounds, even with a lot of practice.
  - c) Because the mathematical concepts were too complicated.
- 5) Which of the following relates to Latin?
  - a) Kai
  - b) X
  - c) Sheen

Posttest Comprehension Questions

- 1) Who is Lothar Meggendorfer?
  - a) The world's first storyteller
  - b) The man who discovered music
  - c) The inventor of the pop-up book
- 2) To which of the following stages did opera move?
  - a) Theater
  - b) Vaudeville
  - c) Film with sound
- 3) Why is storytelling more fun thanks to the Internet?
  - a) Because people can share their stories through many types of devices.
  - b) Because writers can choose many pictures to include in their stories from huge databases on the Internet.
  - c) Because it prevents writers from plagiarizing.
- 4) How many years has storytelling been practiced?
  - a) 6,000
  - b) 60,000
  - c) 600,000
- 5) What was the speaker's main idea?
  - a) To show how storytelling has changed over the years.
  - b) To promote the man who created the pop-up book.
  - c) To tell his own story using digital media and the Internet.

# Fresno State

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