

Contents

List of Tables	x
List of Figures	xiv
List of Abbreviations	xvi
Chapter 1 Introduction	1
1.1 Background to and Rationale of the Study	1
1.2 Aims of This Book	5
1.3 Overview of This Book	7
Chapter 2 Literature Review	9
2.1 Vocabulary Knowledge	10
2.1.1 Aspects of Vocabulary Knowledge	11
2.1.2 Assessing the Form-Meaning Connection	15
2.2 Approaches to Vocabulary Learning	17
2.2.1 What Is Incidental Vocabulary Learning?	18
2.2.2 Theoretical Support for Incidental Vocabulary Learning	20
2.2.3 Empirical Studies on Incidental Vocabulary Learning and Influential Factors	24
2.3 Incidental Vocabulary Learning from Viewing	28
2.3.1 Theoretical Support for Learning from Viewing	28
2.3.2 Use of Captions and L1 Subtitles While Viewing	40
2.3.3 Bilingual Subtitles	53
2.4 Use of Eye-Tracking in SLA	64
2.4.1 Eye-Tracking Measures	65
2.4.2 Eye Movements in Visual Scene Perception and Reading	70
2.4.3 Empirical Eye-Tracking Studies on Captions/Subtitles Viewing	73

2.4.4 Empirical Eye-Tracking Studies on Incidental Vocabulary Learning from Reading and Viewing	82
2.5 Engagement	92
2.5.1 Definitions of Engagement	93
2.5.2 Other Relevant Theories About Engagement in Language Learning	95
2.5.3 Measuring Engagement	98
2.5.4 Empirical Studies Exploring L2 Learners' Engagement with L2 Vocabulary in Reading and Viewing	101
2.5.5 Operationalisation of Engagement in the Current Research	109
2.6 Summary and Research Questions	120
Chapter 3 Methodology	122
3.1 Initial Online Questionnaire Study	122
3.2 Research Design	124
3.3 Pilot Studies	127
3.3.1 Pilot Study One	127
3.3.2 Pilot Study Two	129
3.4 Main Study	130
3.4.1 Participants	130
3.4.2 Research Ethics	132
3.4.3 Materials	134
3.4.4 Instruments	141
3.4.5 Experiment Design and Apparatus	147
3.4.6 Stimulated Recall	148
3.4.7 Data Collection Procedure	149
Chapter 4 QUAN Analyses and Results	152
4.1 QUAN Analyses	153
4.1.1 Scoring of Offline Tests	153
4.1.2 Eye-Movement Data Analysis	154
4.1.3 Quantitative Statistical Analyses	159
4.1.4 Main Statistical Analyses	161

4.1.5 Preliminary Analyses	163
4.2 QUAN Results	164
4.2.1 RQ1 Effects of Subtitles on Vocabulary Learning	164
4.2.2 RQ2 Effects of Subtitles on Comprehension	173
4.2.3 RQ3 Eye Movements During Subtitled Viewing	175
4.2.4 RQ4 Relationship Between Eye Movements and Vocabulary Tests	186
4.3 QUAN Interim Discussion	189
4.3.1 RQ1 — Vocabulary Tests	189
4.3.2 RQ2 — Comprehension	192
4.3.3 RQ3 — Eye-Tracking data	193
4.3.4 RQ4 — Relationship Between Offline and Online Measures	200
Chapter 5 Qual Analyses and Results	204
5.1 Stimulated Recall Analysis	205
5.1.1 Data Sampling	205
5.1.2 Data Coding	206
5.1.3 Inter-Coder Agreement in Coding	210
5.2 Qual Results	211
5.2.1 Level 1: Awareness	211
5.2.2 Level 2: Vocabulary Processing Strategies	213
5.2.3 A Third Level of Engagement that Emerged: Intentionality of Learning	224
5.3 Qual Interim Discussion	225
5.3.1 Level 1: Awareness	225
5.3.2 Level 2: Vocabulary Processing Strategies	227
5.3.3 A Third Level of Engagement that Emerged: Intentionality of Learning	235
5.3.4 Triangulation of Qualitative and Quantitative Findings	236
Chapter 6 General Discussion and Conclusion	246
6.1 Summary of the Main Findings	247
6.2 Implications of the Study	250

6.2.1 Theoretical Implications	250
6.2.2 Methodological Implications	253
6.2.3 Pedagogical Implications	256
6.3 Limitations and Future Directions	258
6.4 Concluding Remarks	263
REFERENCES	265

How to Access the Appendices:

1. Official Website Download:

Visit heep.fltrp.com → Register an account → Log in again →

Enter the book title in the search bar at the top right →

Click “Book Products” → Click the book title →

Click “Supporting Resources” → Download the appendices.

2. WeChat Access:

Scan the QR code below to view the appendices online.



Chapter 1

Introduction

1.1 Background to and Rationale of the Study

Vocabulary, regarded as “building blocks” in language use (Webb & Nation, 2017, p. 5), is an essential and fundamental component of second language acquisition (SLA) (Schmitt, 2010). There is a wealth of research evidence showing that second language (L2) learners’ vocabulary knowledge contributes greatly to their proficiency level and to the four language skills (i.e., reading, listening, speaking, and writing), making vocabulary knowledge a vital prerequisite for language learning success (Qian & Lin, 2020; Schmitt, 2010).

English as a Foreign Language (EFL) learners are expected to master 6,000–7,000 word families in order to accomplish informal daily conversation, and this number rises to around 8,000–9,000 when it comes to reading a range of authentic texts (Nation, 2006). Due to the limited amount of classroom time, it has been suggested that deliberate vocabulary learning needs to be supplemented by incidental learning (Krashen, 1989; Schmitt, 2010; Webb, 2020b; Webb & Nation, 2017). In general, *incidental vocabulary learning* is vocabulary learning that occurs as a by-product of meaning-focused activities or tasks, where learners’ primary objective is to focus on understanding the meaning without an effort focusing on learning language (Ellis, 1999; Hulstijn, 2003). Vocabulary researchers agree that being exposed to large amounts of comprehensible L2 input facilitates vocabulary learning, and that the advantages

of incidental vocabulary learning should not be underestimated (Nation, 2013; Webb, 2020a; Webb & Nation, 2017).

Evidence for possible ways to learn vocabulary incidentally abounds. Research has shown that language learners can expand their vocabulary size and deepen their vocabulary knowledge as a by-product of communicative activities, where the main aim is comprehension rather than vocabulary learning (Hulstijn, 2001, 2003). Previous studies have demonstrated the effectiveness of reading (e.g., Elgort et al., 2018; Pellicer-Sánchez, 2016; Pellicer-Sánchez & Schmitt, 2010; Pigada & Schmitt, 2006), listening (e.g., Brown et al., 2008; Elley, 1989; Pavia et al., 2019; Van Zeeland & Schmitt, 2013), and reading-while-listening (e.g., Chang, 2019; Vu & Peters, 2020; Webb et al., 2013) for foreign language learners' incidental vocabulary growth. More recently, researchers have started to explore the effectiveness of viewing and have shown its benefits for incidental vocabulary learning (e.g., Montero Perez et al., 2018; Peters & Webb, 2018; Rodgers & Webb, 2019).

Apart from the advantages of wide availability and easy accessibility (Montero Perez, 2020b; Rodgers & Webb, 2011), watching authentic audio-visual materials has more potential to motivate L2 learners and further increase their language exposure compared to traditional L2 input (Peters, 2018; Webb & Rodgers, 2009). Moreover, the combination of both visual and aural input can be more conducive to incidental vocabulary learning than either visual or aural input alone (Duquette & Painchaud, 1996; Neuman & Koskinen, 1992). Especially, the use of *captions* (i.e., on-screen text in the same language as the soundtrack) and *first language (L1) subtitles* (i.e., on-screen text translated in the viewer's L1) has been found to support this process (e.g., Frumuselu, et al., 2015; Koolstra & Beentjes, 1999; Montero Perez et al., 2013; Peters, 2019; Pujadas & Muñoz, 2019; Winke et al., 2013). The majority of studies on viewing have examined the effectiveness of the use of captions and/or L1 subtitles for learning, as they have been claimed to be the ones most frequently encountered by foreign language learners (Muñoz, 2017). However, in certain contexts, *bilingual subtitles* (i.e., the simultaneous presentation of L1 subtitles and

captions; Bartolomé & Cabrera, 2005) are the preferred and most frequently used subtitling type and, despite their popularity, very little research has been conducted to examine their benefits for language learning.

In the Chinese context, where my study is situated, online viewing is a very popular form of entertainment. A 2021 report by the China Internet Network Information Center showed that there were 989 million online video users in China and 927 million of them accessed video sites online (CNNIC, 2021), which covers about 66 per cent of the overall population. Additionally, watching foreign language audio-visual material is a very common entertainment activity among Chinese EFL learners, and bilingual subtitles are a strong competitor for monolingual subtitles (Li, 2016). An initial online survey conducted as part of this book (see Section 3.1) showed that Chinese learners had a clear preference for bilingual subtitles. However, despite their widespread use, empirical studies examining the effectiveness of bilingual subtitles for L2 vocabulary learning are still scarce.

Bilingual subtitles are believed to be conducive to vocabulary learning because L1 lines provide translations of unknown L2 words and facilitate comprehension, while L2 lines provide the form of unknown words and help learners link written and spoken forms (Li, 2016; Lwo & Lin, 2012). The possibility of connecting an L2 unknown form with its correct meaning might support vocabulary learning. However, according to the Depth of Processing Theory (Craik & Lockhart, 1972), it can also be argued that having translations of L2 unknown words may reduce learners' cognitive analysis of their meanings and lead to shallower memory traces, which are then reflected in smaller gains. Importantly, according to the Cognitive Load Theory (Sweller, 1988), there is also the potential for cognitive overload, as when identical information is presented in different forms, learners' working memory may be overloaded, resulting in a redundancy effect that hinders the learning process (Sweller, 2005b; Winke et al., 2013). Empirical evidence examining the effectiveness of bilingual subtitles for vocabulary learning is scarce and available research has yielded conflicting results, with studies reporting both an advantage for

bilingual subtitles over captions and L1 subtitles (e.g., Lazareva & Loerts, 2017; Li, 2016) and a lack of any significant difference between bilingual subtitles and other subtitling conditions (e.g., Hao et al., 2021; Lwo & Lin, 2012). These inconsistent findings could be due to learners' differential use of the sources of input available in bilingual subtitles.

Apart from the lack of research on bilingual subtitles, the majority of studies exploring the effectiveness of different subtitling types have mainly used offline, post-viewing tests, which, although highly informative, cannot tell us much about how learners make use of bilingual subtitles. Thus, it is still not clear how learners process different sources of input and how that relates to their vocabulary learning. One technique that can shed some light on learners' online processing of bilingual subtitles is eye-tracking. This technique has been used to detect learners' attention allocation during subtitled viewing (e.g., Gass et al., 2019; Muñoz, 2017; Winke et al., 2013). However, only one eye-tracking study to date has investigated learners' attention allocation during bilingual subtitled viewing (Liao et al., 2020). Due to the limited sample size and short length of stimuli, learners' processing of bilingual subtitles is still far from settled. Most importantly, vocabulary gains were found to closely relate to the amount of time spent processing novel words while viewing (Montero Perez et al., 2015). This is particularly relevant for bilingual subtitles, where learners can choose how they want to allocate their attention (to a L2 novel word and/or its translation), but no studies so far have investigated this relationship in bilingual subtitled viewing.

Attention paid to a lexical item can partly reveal a learner's "engagement" with the word (Schmitt, 2008, p. 339). However, despite the essential role of attention in vocabulary learning, increased attention does not always lead to greater learning gains, since there are other factors influencing vocabulary learning that should also be taken into account (Schmitt, 2008, 2010). Eye-tracking data can only reveal where and for how long learners locate their attention while viewing, but cannot inform us about learners' underlying cognitive processes, i.e., what they are thinking about when processing a word

(Godfroid & Winke, 2015; Montero Perez et al., 2015; Pellicer-Sánchez, 2020a). *Engagement* is a multifaceted construct that has many definitions in education and language learning research. In the present study, the definition of engagement with vocabulary is adapted from Svalberg's (2009) construct of *engagement with language*. In this study, cognitive engagement, as defined by Svalberg (2009) in the context of vocabulary learning, is operationalised as attention, awareness, and vocabulary processing strategies. To have a more comprehensive view of learners' engagement with unknown vocabulary, it is necessary to not only investigate the level of learners' attention, as reflected in eye movements, but also to probe learners' awareness and different processing strategies used to engage with words by collecting learners' self-reported introspective data (as measured by stimulated recall interviews).

To date, little is known about how learners engage with novel words in bilingual subtitles and how learners' engagement may relate to their vocabulary gains. Having a better understanding of how learners process and make use of bilingual subtitles should help to explain the current conflicting research findings on the effectiveness of bilingual subtitles. Furthermore, by comparing online and offline measures, we should be able to see if (and how) learners' allocation of attention is related to their vocabulary learning gains. Additionally, the triangulation of quantitative findings (i.e., online and offline measures) and qualitative findings (i.e., stimulated recall interviews) can paint a fuller picture of learners' engagement and help us better understand the relationship between learners' engagement and learning gains.

1.2 Aims of This Book

As outlined above, despite the widespread use of bilingual subtitles among Chinese learners of English, there is a paucity of research investigating their effectiveness on incidental vocabulary learning. Furthermore, no research has explored how learners engage with unknown words during bilingual subtitled viewing. A thorough investigation of the use of bilingual subtitles can reveal the

potential of bilingual subtitles for L2 learners' incidental vocabulary learning and maximise this learning potential. Since viewing is a meaning-focused activity and learners engage in this activity with the main aim of understanding its content, it is also important to explore potential differences in comprehension. Thus, while the primary focus of this book is to examine vocabulary learning, the relative effectiveness of bilingual subtitles on comprehension is also explored. The current research addresses the following aims:

1. To examine the relative effectiveness of bilingual subtitles for incidental vocabulary learning and comprehension, compared to captions, L1 subtitles, and no subtitles, by using offline tests.

2. To investigate learners' attention allocation to subtitled areas and novel words during bilingual subtitled viewing (in comparison to captions, L1 subtitles, and no subtitles), through learners' recorded eye movements.

3. To explore learners' awareness of novel words and their use of vocabulary processing strategies during bilingual subtitled viewing (in comparison to captions, L1 subtitles, and no subtitles) by means of stimulated recall interviews.

4. To examine the relationship between learners' engagement with novel words (as measured by eye movements and stimulated recall interviews) and learning gains (as measured by offline vocabulary tests).

In order to achieve these aims, a mixed methods study was conducted. As shown in Figure 1, the quantitative methods (as represented in two rectangles) include offline tests measuring the effects of bilingual subtitles on vocabulary learning and online eye-tracking data capturing learners' eye movements while viewing. The qualitative method (as represented in the oval) includes learners' verbal reports of their cognitive processes while viewing to examine their awareness and vocabulary processing strategies. Quantitative analyses of vocabulary tests and eye-movement data were first conducted, followed by qualitative analyses of stimulated recall interviews. The relationship between learners' vocabulary tests scores and eye-movement data was analysed

quantitatively (as shown by the solid arrowed line). Results from the different analyses were finally triangulated (as shown by three arrowed lines) to examine the relationship between learners' engagement and vocabulary gains.

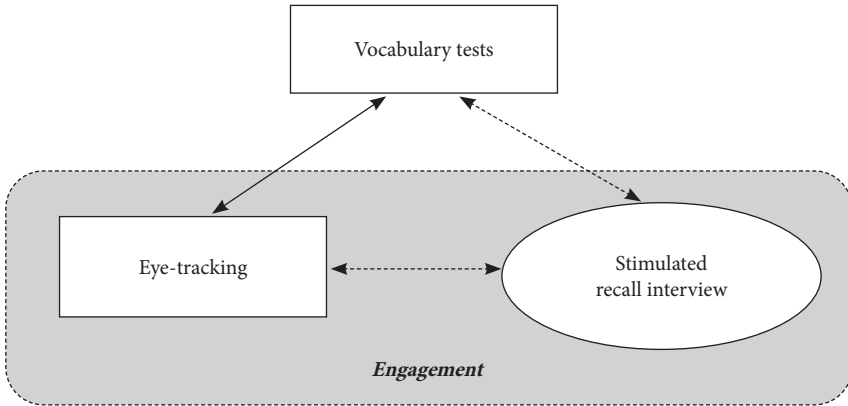


Figure 1 Simple Illustration of the Mixed Methods Design and Data Analysis

1.3 Overview of This Book

The remainder of this book consists of five chapters. Chapter 2 reviews relevant literature by first introducing the construct of vocabulary and the theoretical and empirical evidence supporting incidental vocabulary learning. This is followed by a review of the theoretical and empirical support for incidental vocabulary learning through viewing. Empirical studies exploring the use of captions and L1 subtitles in incidental vocabulary learning are reviewed afterwards. Bilingual subtitles, which are the focus of this study, are then introduced, followed by a review of empirical studies exploring their effectiveness for L2 vocabulary learning. Then, the application of eye-tracking methods in L2 vocabulary learning, with a specific focus on reading and viewing research, is discussed. This chapter ends with a review of the construct of engagement and empirical studies exploring L2 learners' engagement with vocabulary while reading and viewing.

Chapter 3 outlines the methodology of the present study. It starts by

reporting the results of an initial online questionnaire conducted to support the rationale for the present study by demonstrating Chinese EFL learners' habits of viewing and subtitle use. Then, the mixed methods design employed in the main study is described, followed by brief summaries of two pilot studies. The methodology employed in the main study is then presented. Data analysis procedures and results are presented separately for quantitative and qualitative data. Chapter 4 presents scoring and statistical analyses for quantitative data including offline tests and eye-movement data, followed by the results and interim discussion of the quantitative analysis. Chapter 5 explains the coding procedure for and analysis of stimulated recall data. The results of qualitative analyses are then summarised, followed by an interim discussion of the qualitative findings as well as the triangulation of three sets of data. Chapter 6 draws final conclusions by summarising the main findings of the study, followed by a discussion of its theoretical, methodological, and pedagogical implications. This chapter concludes by considering the limitations of the present study and suggesting possible directions for future research.

Contents

List of Tables	x
List of Figures	xiv
List of Abbreviations	xvi
Chapter 1 Introduction	1
1.1 Background to and Rationale of the Study	1
1.2 Aims of This Book	5
1.3 Overview of This Book	7
Chapter 2 Literature Review	9
2.1 Vocabulary Knowledge	10
2.1.1 Aspects of Vocabulary Knowledge	11
2.1.2 Assessing the Form-Meaning Connection	15
2.2 Approaches to Vocabulary Learning	17
2.2.1 What Is Incidental Vocabulary Learning?	18
2.2.2 Theoretical Support for Incidental Vocabulary Learning	20
2.2.3 Empirical Studies on Incidental Vocabulary Learning and Influential Factors	24
2.3 Incidental Vocabulary Learning from Viewing	28
2.3.1 Theoretical Support for Learning from Viewing	28
2.3.2 Use of Captions and L1 Subtitles While Viewing	40
2.3.3 Bilingual Subtitles	53
2.4 Use of Eye-Tracking in SLA	64
2.4.1 Eye-Tracking Measures	65
2.4.2 Eye Movements in Visual Scene Perception and Reading	70
2.4.3 Empirical Eye-Tracking Studies on Captions/Subtitles Viewing	73

2.4.4 Empirical Eye-Tracking Studies on Incidental Vocabulary Learning from Reading and Viewing	82
2.5 Engagement	92
2.5.1 Definitions of Engagement	93
2.5.2 Other Relevant Theories About Engagement in Language Learning	95
2.5.3 Measuring Engagement	98
2.5.4 Empirical Studies Exploring L2 Learners' Engagement with L2 Vocabulary in Reading and Viewing	101
2.5.5 Operationalisation of Engagement in the Current Research	109
2.6 Summary and Research Questions	120
Chapter 3 Methodology	122
3.1 Initial Online Questionnaire Study	122
3.2 Research Design	124
3.3 Pilot Studies	127
3.3.1 Pilot Study One	127
3.3.2 Pilot Study Two	129
3.4 Main Study	130
3.4.1 Participants	130
3.4.2 Research Ethics	132
3.4.3 Materials	134
3.4.4 Instruments	141
3.4.5 Experiment Design and Apparatus	147
3.4.6 Stimulated Recall	148
3.4.7 Data Collection Procedure	149
Chapter 4 QUAN Analyses and Results	152
4.1 QUAN Analyses	153
4.1.1 Scoring of Offline Tests	153
4.1.2 Eye-Movement Data Analysis	154
4.1.3 Quantitative Statistical Analyses	159
4.1.4 Main Statistical Analyses	161

4.1.5 Preliminary Analyses	163
4.2 QUAN Results	164
4.2.1 RQ1 Effects of Subtitles on Vocabulary Learning	164
4.2.2 RQ2 Effects of Subtitles on Comprehension	173
4.2.3 RQ3 Eye Movements During Subtitled Viewing	175
4.2.4 RQ4 Relationship Between Eye Movements and Vocabulary Tests	186
4.3 QUAN Interim Discussion	189
4.3.1 RQ1 — Vocabulary Tests	189
4.3.2 RQ2 — Comprehension	192
4.3.3 RQ3 — Eye-Tracking data	193
4.3.4 RQ4 — Relationship Between Offline and Online Measures	200
Chapter 5 Qual Analyses and Results	204
5.1 Stimulated Recall Analysis	205
5.1.1 Data Sampling	205
5.1.2 Data Coding	206
5.1.3 Inter-Coder Agreement in Coding	210
5.2 Qual Results	211
5.2.1 Level 1: Awareness	211
5.2.2 Level 2: Vocabulary Processing Strategies	213
5.2.3 A Third Level of Engagement that Emerged: Intentionality of Learning	224
5.3 Qual Interim Discussion	225
5.3.1 Level 1: Awareness	225
5.3.2 Level 2: Vocabulary Processing Strategies	227
5.3.3 A Third Level of Engagement that Emerged: Intentionality of Learning	235
5.3.4 Triangulation of Qualitative and Quantitative Findings	236
Chapter 6 General Discussion and Conclusion	246
6.1 Summary of the Main Findings	247
6.2 Implications of the Study	250

6.2.1 Theoretical Implications	250
6.2.2 Methodological Implications	253
6.2.3 Pedagogical Implications	256
6.3 Limitations and Future Directions	258
6.4 Concluding Remarks	263
REFERENCES	265

How to Access the Appendices:

1. Official Website Download:

Visit heep.fltrp.com → Register an account → Log in again →

Enter the book title in the search bar at the top right →

Click “Book Products” → Click the book title →

Click “Supporting Resources” → Download the appendices.

2. WeChat Access:

Scan the QR code below to view the appendices online.

