

**Vocabulary learning through subtitled video
viewing as mediated by language aptitude:**

**The case of EFL beginner learners
at primary school**

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EuroSLA 29

28-31 August 2019, Lund (Sweden)



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Theoretical Background

Dual Coding Theory Paivio, 1986, 2007

- **Verbal** and **non-verbal** systems
- **Interaction yet independent**
- **Activation** → stimulation
- Greater **depth of processing** and better **recall**

Cognitive Load Theory Chandler & Sweller, 1991; Sweller, 1994

- Brain's **limited cognitive capacity**, should not be overloaded
- **Multimodality** may **increase** cognitive load (CL)
- **Subtitles** as a tool to **reduce CL** in language acquisition settings

Cognitive Theory of Multimedia Learning

Mayer, 2002, 2009

- “Students learn more deeply from a multimedia explanation than from a verbal explanation” (2002: 62)

Theoretical Background

Bimodal input (text & sound)

- **Better learning**

Holobow et al., 1984; Bird & Williams, 2002;
Granena et al., 2015

Multimodal input (text & video)

- **Positive for SLA**

Price, 1983; Baltova, 1999; Markham et al.,
2001; Danan, 2004

- **Listening comprehension
and vocabulary acquisition**

Garza, 1991; Vanderplank, 2010, 2016;
Rodgers, 2013; Montero Perez et al., 2013,
2014; Suárez & Gesa, 2019

Learners approach the task according
to their **abilities**

(Dörnyei, 2005; Tight, 2010)

Visual vs. Auditory learners

Theoretical Background

- **Best procedure for class use?**
 - Good selection of videos and adequate captions / subtitles
 - Adapted to learners' proficiency level
 - Guided viewing

Vanderplank, 2010; Webb, 2015

Needed to foster FL learning



Theoretical Background

Subtitles in L1 (standard)

- Recommended for **low levels**
- Improve **auditory comprehension**
- Enhance **automatic reading**
- Help to relate **form & meaning**

Danan, 2004

Plass & Jones, 2005

Peters et al., 2016

Kuppens, 2010

Subtitles in L2 (bimodal subtitles)

- **Beneficial** effects
- **Oral and written** association
- Develop **segmentation abilities**

Frumuselu et al., 2015

Borrás & Lafayette, 1994

Charles & Trenkic, 2015

Theoretical Background

- Most **vocabulary research** conducted so far:

Adult university learners Sydorenko, 2010; Etemadi, 2012

One-off studies Yuksel & Tanriverdi, 2009; Montero Perez et al., 2018

Few exceptions Zarei, 2009; Rodgers, 2013; Frumuselu, 2015

Combination of audio and on-screen text (standard, reversed, bimodal...) Stewart & Pertusa, 2004; Lavour & Bairstow, 2011; Peters et al., 2016

- **Scarce research:**

- Non-university learners (e.g. children or teenagers)
- Sustained exposure to multimodal input
- Classroom-based
- Video viewing vs. formal language instruction
- Connecting vocabulary learning from video viewing to IDs

Theoretical Background

- Aptitude is **multicomponential** (MLAT, MLAT-E, MLAT-EC/ES, LLAMA, Hi-Lab...).
- Little research on how each subtest (i.e. aptitude component tapped by the test) influences language learning rate.

Phonemic coding ability

- the ability to identify and memorize new sounds or strings of sounds

Grammatical sensitivity

- the ability to understand how words function grammatically in sentences

Inductive language learning ability

- the ability to infer grammatical rules from language samples

Rote learning ability for FL materials

- the ability to learn a large number of semantic-symbol and/or sound-symbol associations in a short period of time

Carroll's (1981) aptitude components

Theoretical Background

Part	MLAT-EC (Grades 3-7)	Construct
1	Hidden Words	Vocabulary learning <i>Sound-symbol association</i>
2	Words in Sentences	Grammatical sensitivity
3	Rhyming Words	<i>Hearing and distinguishing speech sounds</i>
4	Number Learning	Vocabulary learning <i>Rote learning memory</i> <i>Auditory comprehension</i>

Theoretical Background

- Good general **L2 proficiency predictor**, but low predictive validity for vocabulary and L2 writing [Li, 2016](#) with some exceptions.
- Regarding **lexical variety** in writing, using HUNLAT or MLAT-EC/ES: inconsistent results. [Kormos & Trebits, 2012](#); [Rosa & Muñoz, 2013](#); [Muñoz, 2014](#); [Suárez, 2014](#)
- Moderate significant correlations with **receptive and productive vocabulary** (5-9 years old, Greek learner's aptitude battery). [Alexiou, 2009](#)
- Positive significant correlations with **vocabulary recall** and **recognition**, using MLAT [Dahlen & Caldwell-Harris, 2013](#) and with L2 vocab-learning related skills besides L2 vocabulary measure. [Sparks, Patton & Luebbers, 2019](#)
- Aptitude relevant for **word meaning learning** in captioned video viewing at (upper-)intermediate level (LLAMA). [Suárez & Gesa, 2019](#)

Research Questions

In grade 6 EFL learners:

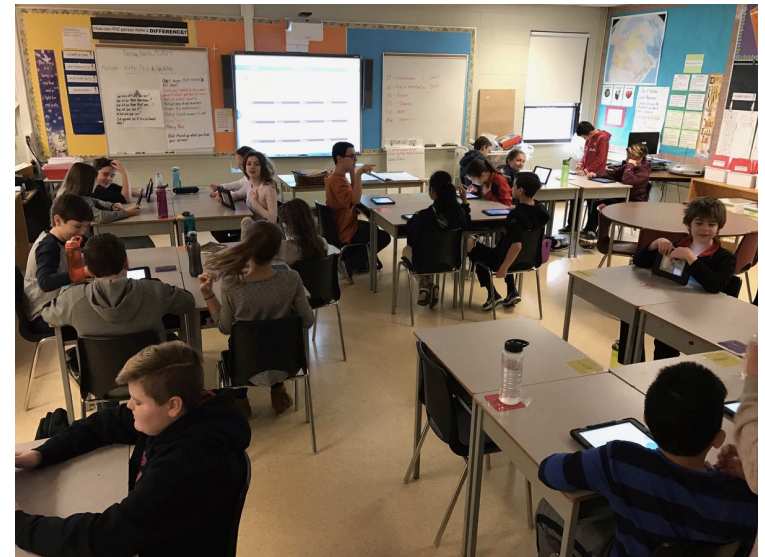
- 1) does **extended exposure** to **L1 subtitled TV series** lead to significant **gains in vocabulary** learning, as compared to receiving formal language instruction?
- 2) to what extent is **language aptitude** linked to any gains in vocabulary learning from viewing L1 subtitled TV series?

Participants

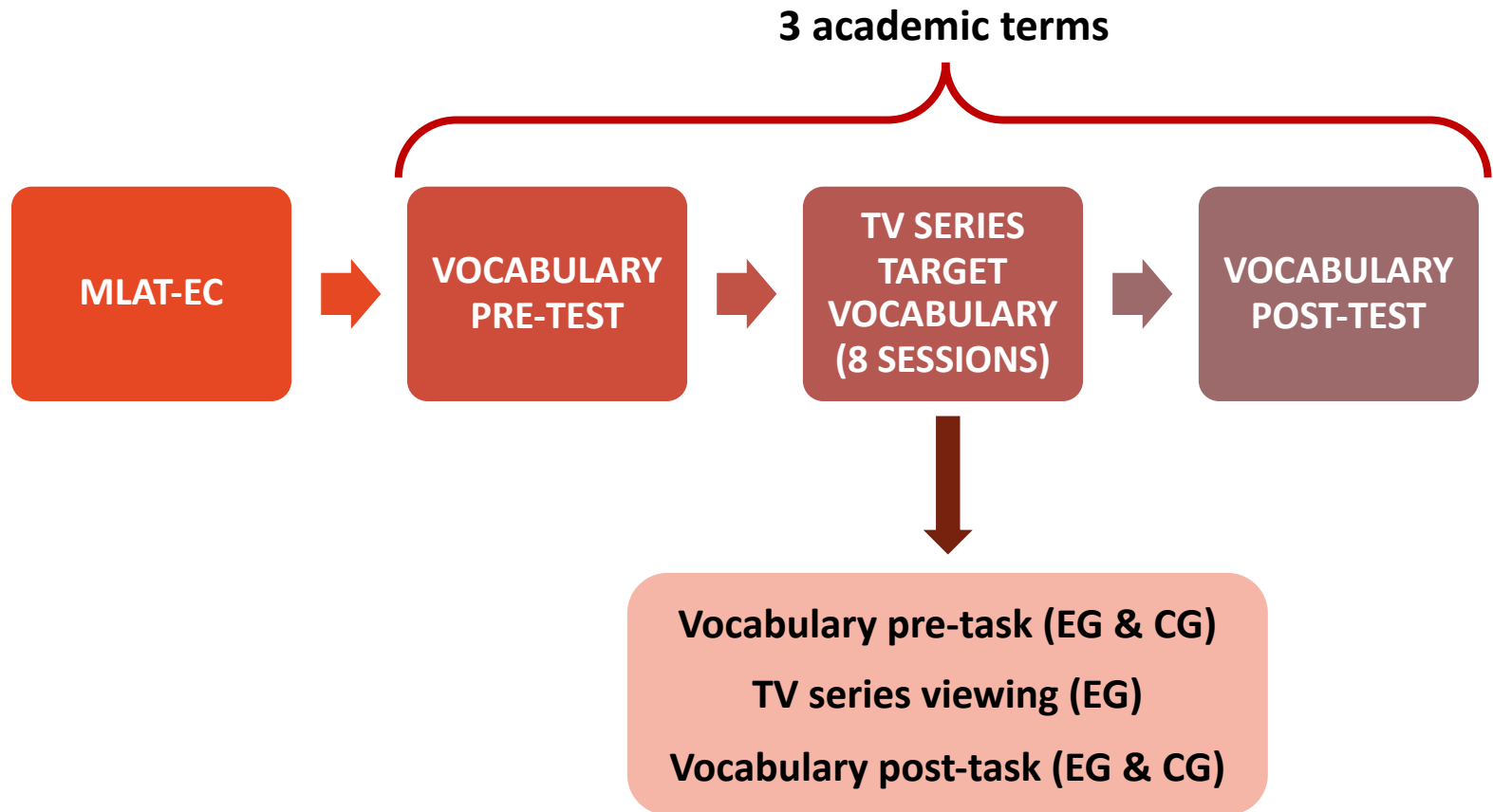
Experimental Group (EG)	Control Group (CG)
<i>n</i> =22	<i>n</i> =18

Grade 6 Catalan / Spanish EFL learners

- Last year of primary school
- A1-A2 proficiency level
- 900 h formal instruction
- 11-12 years old
- 18 boys / 22 girls
- Semi-private school in Catalonia



Procedure



Instruments

- *The Suite Life of Zack and Cody* (16 episodes) (Terms 1 and 2) + *Wizards of Waverly Place* (8 episodes) (Term 3)
- English audio and Spanish subtitles (vocabulary size: 1,500 words- Webb & Rodgers, 2009)
- **8 episodes x 3 terms** (21 min. 30 sec. each) → **8h 36 min.** of multimodal input exposure
- 5 target words / episode → **40** target words per term → **120** target words in total



Instruments

TESTS

VOCABULARY PRE- & POST-TEST

40 TWs

Beginning / end of the term

Form and meaning recall

1. A continuación escucharás veinte palabras. Escríbelas en inglés y tradúcelas al castellano o catalán. Si de alguna palabra conoces más de un significado, escríbelo. Escucharás cada palabra un total de dos veces.

Palabras

	Inglés	Castellano - Catalán
1		
2		
3		
4		
5		

Instruments

TASKS

VOCABULARY PRE-TASK

Pre-teaching of TWs
 Focus-on-forms approach
 Beginning of each session

"Footloser"

1. Find the words that match the definitions. The number of letters that each word has is given next to its definition.

L T I J G J C H J **A** E F
 C H C Q H W P **T** C N H U
 E Q Q K K Q S H F K R D
 A Z H **C** W E I I G L S O
 S Z V I T K C R Z E R J
 D Z M N T P U S K V I F
 V G O R K V G T G I A Y
 P **C** U T R J O Y A O R T
 W **H** D S T W B Y C C Q F
 F M J D J V T R V D H L
 R T V N C Q I B T M A S
 V O T O X I F Z C B H E

Definitions

A) Part of the body that connects the foot to the leg (5 letters) A _____
 B) A competition where people try to win something (7 letters) C _____
 C) Wanting to drink (7 letters) T _____
 D) To cause physical pain (4 letters) H _____
 E) To have to return money that you borrowed (3 letters) O _____

VOCABULARY POST-TASK

5 TWs
 Form recall and meaning recognition
 End of each session

"Footloser"

1. Escucharás cinco palabras en inglés. Cada palabra se va a repetir dos veces. Escribe cada palabra en los espacios en blanco (1, 2, 3...) y di qué significan (opción a, b, c...). Si no sabes qué quiere decir alguna palabra, elige la opción f) 'No lo sé'.

1) _____ 4) _____

a) Intacto a) Retener
 b) Jurado b) Acontecimiento
 c) Tío c) Concurso
 d) Tobillo d) Protestar
 e) Codo e) Talento
 f) No lo sé f) No lo sé

2) _____ 5) _____

a) Caja a) Hacer daño
 b) Hambriento b) Corazón
 c) Sediento c) Criticar
 d) Primeramente d) Masaje
 e) Magia e) Aire
 f) No lo sé f) No lo sé

3) _____

a) Deber a) Deber
 b) Obligar b) Obligar
 c) Reír c) Reír
 d) Extraño d) Extraño
 e) Arco e) Arco
 f) No lo sé f) No lo sé

Instruments

MLAT-EC Part 1: Hidden Words

15. bakka A és dolça B part de la cara **C fa llet** D amb arrugues

MLAT-EC Part 2: Words in Sentences

6. Em vaig tallar el DIT amb un ganivet.
El meu germà s'oblidà les **claus** a casa.

MLAT-EC Part 3: Finding Rhymes

45. **FLABIOL** A) pèsol B) Oriol C) flascó D) avió

Instruments

MLAT-EC Part 4: Number Learning

Units

- co = u (1)
- vein = dos (2)
- ras = tres (3)

Tens

- silca = deu (10)
- vinca = vint (20)
- rasca = trenta (30)

rasca
30



ras
3



trenta-
tres
33

Relative gains formula applied Horst et al., 1998; Rodgers, 2013:

$$\frac{N \text{ of forms or meanings learned}}{N \text{ of items} - N \text{ of forms or meanings known}} \times 100$$

- **Learned** → *N* of TW forms or meanings answered correctly on the post-test, but incorrectly on the pre-test.
- **Known** → *N* of TW forms or meanings answered correctly on both the pre- and the post-test.
- **Number of items** → *N* of TW forms or meanings on which participants were tested (*N*=40 x 3 academic terms).

Scoring - Vocabulary gains

Analyses

- **RQ1**

Generalized Linear Mixed Models (GLMMs) (EGs and CGs - $N=40$ -)

- Targets: Relative gains for form
Relative gains for meaning
- Fixed effects: Condition (EG vs. CG)
Time (T1, T2, T3)

- **RQ2**

Generalized Linear Mixed Models (GLMMs) (only EG - $n=22$ -)

- Targets: Relative gains for form
Relative gains for meaning
- Fixed effects: MLAT-EC parts and total score
Time (T1, T2, T3)

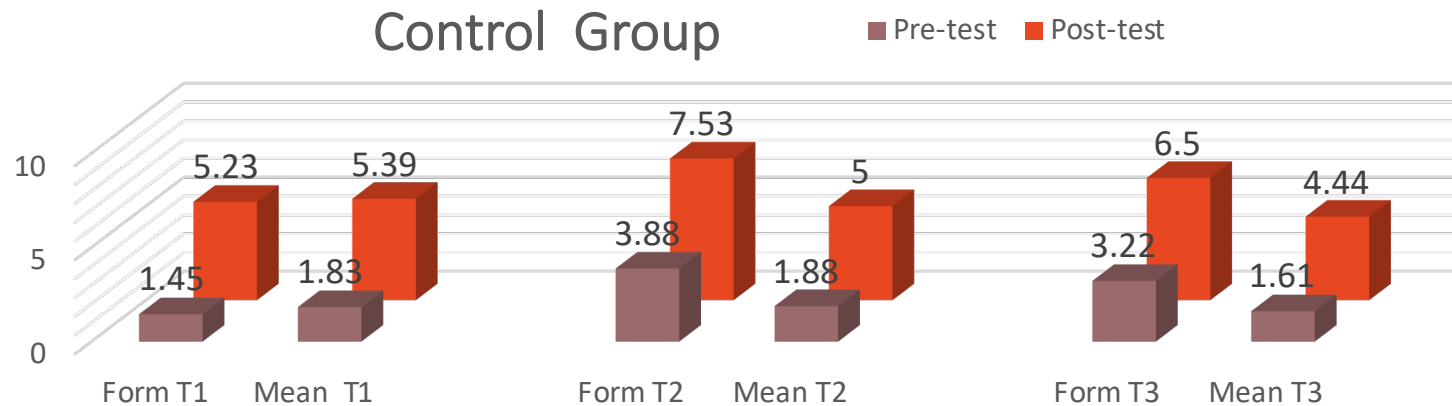
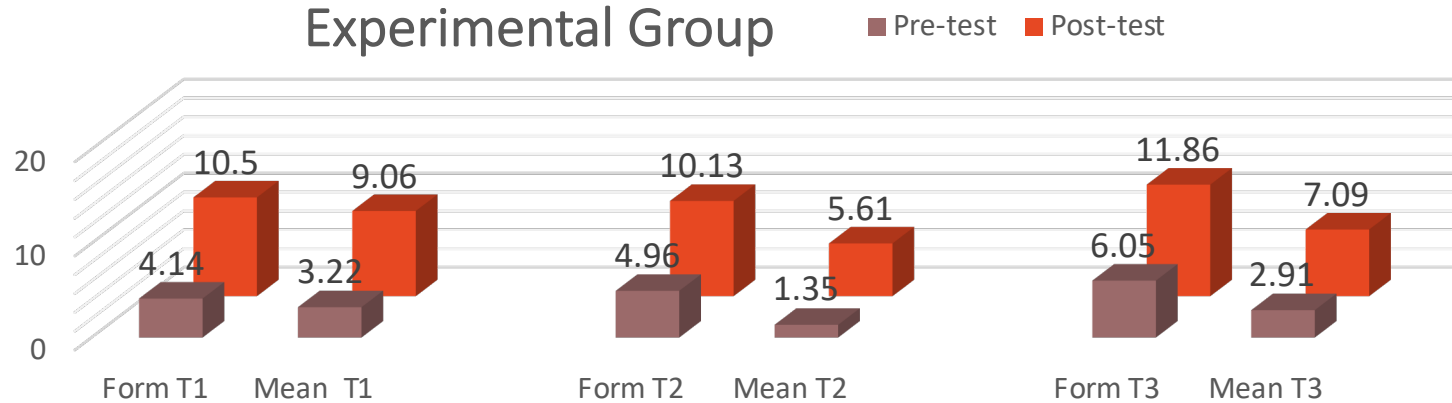
Research Questions

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Results - RQ1

Pre-/ post-tests T1-T2-T3 for Form and Meaning: raw descriptives



Paired samples *t*-tests and Wilcoxon signed-rank tests were all significant pre/post $p = .000$ or $.001$

Results RQ1

Form

Variable	Time	Experimental Group	Control Group
RELATIVE GAINS (in %)	T1	$M=20.82$ (10.75)	$M=18.39$ (10.42)
	T2	$M=18.08$ (10.49)	$M=13.07$ (7.30)
	T3	$M=20.19$ (11.43)	$M=12.28$ (11.59)

* SD in brackets

Meaning

Variable	Time	Experimental Group	Control Group
RELATIVE GAINS (in %)	T1	$M=10.33$ (8.35)	$M=10.80$ (10.62)
	T2	$M=11.30$ (6.22)	$M=9.48$ (9.35)
	T3	$M=11.70$ (7.05)	$M=8.47$ (5.95)

* SD in brackets

Results

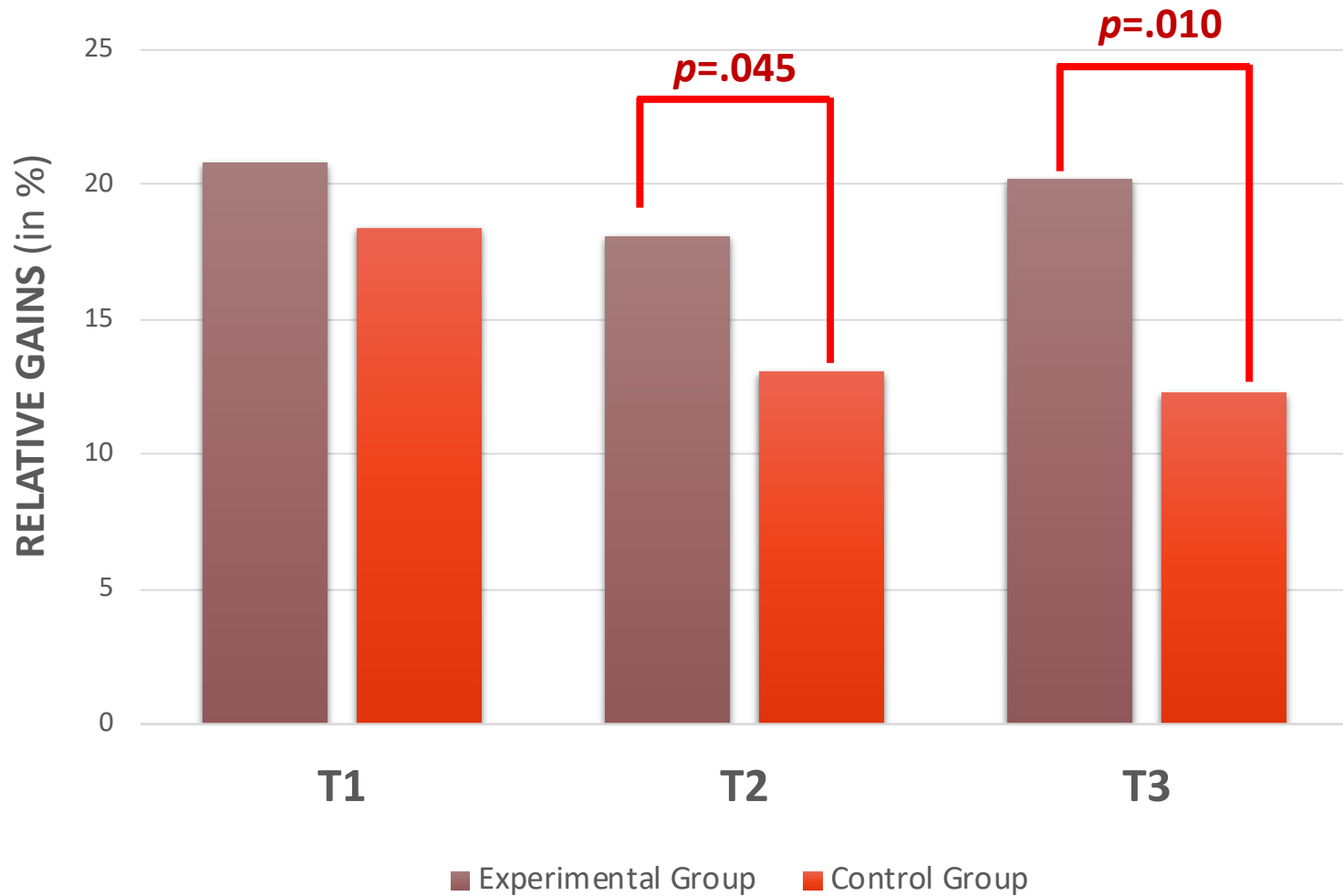
RQ1

TW FORM

- Significant main effect for condition
 $F(1, 114)=5.113, p=.026$
- Significant main effect for time
 $F(2, 114)=3.978, p=.021$
- No significant interaction time*condition
 $F(2, 114)=.975, p=.380$
- Simple contrasts between EG and CG:
 - T1 $\rightarrow \beta=3.859, p=.228$
 - T2 $\rightarrow \beta=6.284, p=.045$
 - T3 $\rightarrow \beta=7.666, p=.010$

Results - RQ1

TW form



Results

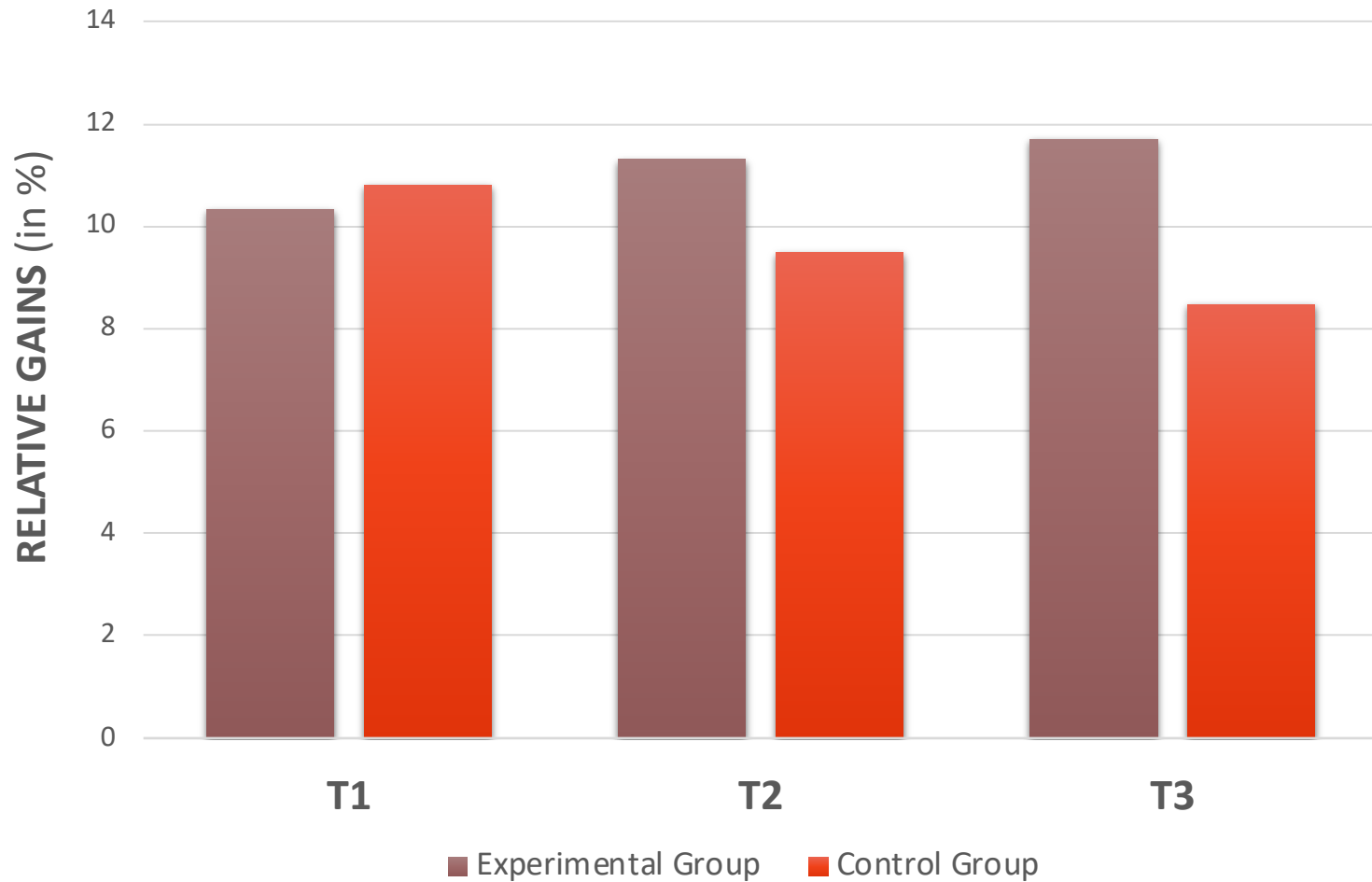
RQ1

TW MEANING

- No significant main effect for condition
 $F(1, 114)=.931, p=.337$
- No significant main effect for time
 $F(2, 114)=.202, p=.817$
- No significant interaction time*condition
 $F(2, 114)=.938, p=.394$
- Simple contrasts between EG and CG:
 - T1 $\rightarrow \beta=.319, p=.900$
 - T2 $\rightarrow \beta=2.631, p=.242$
 - T3 $\rightarrow \beta=2.483, p=.205$

Results - RQ1

TW meaning



Research Questions

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- 1) does extended exposure to L1 subtitled TV series lead to significant gains in vocabulary learning, as compared to receiving formal language instruction?
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Results - RQ2

MLAT-EC

Aptitude MLAT-EC	Experimental Group	Control Group	All
Part 1: Hidden Words (in %)	<i>M</i> =77.88 (15.65)	<i>M</i> =75.56 (17.90)	<i>M</i> =76.83 (16.52)
Part 2: Words in Sentences (in %)	<i>M</i> =62.12 (23.89)	<i>M</i> =75 (22.02)	<i>M</i> =67.92 (26.38)
Part 3: Finding Rhymes (in %)	<i>M</i> =75.96 (21.13)	<i>M</i> =83.92 (9.88)	<i>M</i> =79.54 (17.30)
Part 4: Number Learning (in %)	<i>M</i> =75.63 (26.92)	<i>M</i> =73.33 (25.78)	<i>M</i> =74.60 (26.11)
TOTAL (in %)	<i>M</i> =72.98 (17.94)	<i>M</i> =77.55 (12.82)	<i>M</i> =75.04 (15.82)

* SD in brackets

No significant differences from Mann-Whitney *U* tests EG vs CG.

Results RQ2

TW FORM & APTITUDE

- Significant main effect for **Part 1 Hidden Words**
 $F(1, 60)=4.583, p=.036$
- Significant main effect for **Part 2 Words in Sentences**
 $F(1, 60)=7.828, p=.007$
- Significant main effect for **Part 4 Number Learning**
 $F(1, 60)=5.631, p=.021$
- Significant main effect for **MLAT-EC Total**
 $F(1,60)=7.051, p=.010$
- No significant interaction MLAT-EC Parts/Total * Time

Results RQ2

TW MEANING & APTITUDE

- Significant main effect for **Part 1 Hidden Words**
 $F(1, 60)=4.020$, $p=.049$
- No significant interaction MLAT-EC
Parts/Total * Time

Discussion: Vocabulary

- Dual Coding Theory and Cognitive Theory of Multimedia Learning hold true for **vocabulary acquisition**:
 - Experimental Group → verbal and non-verbal information
 - Control group → verbal information

Paivio, 1986, 2007; Mayer, 2009

- Even if multimodality may have increased cognitive load, that was **not detrimental** for **word form** learning (EG > CG).

Brünken et al., 2002

- **Accumulation of input** and **familiarity** with the dynamics of the intervention diminished cognitive load and probabilities of cognitive overload.
- Learners benefitted from different **modalities of input**:
 - Multimedia learning (EG) → text + sound + image
 - Regular instruction (CG) → text + sound

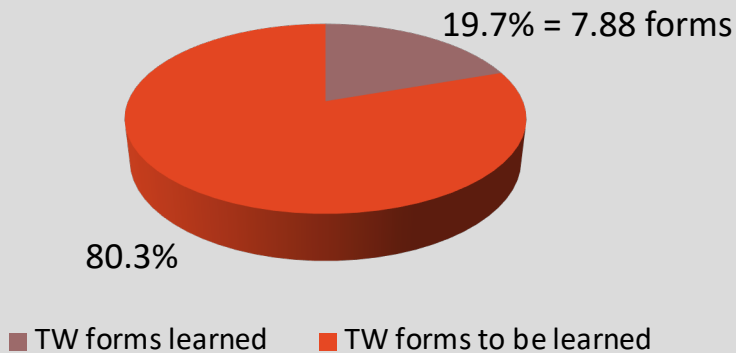
Discussion: Vocabulary

- TV viewing **benefits also for younger beginner learners**, even if gains are limited.
Rice et al. 1990; Koolstra & Beentjes, 1999; Kuppens, 2010
- **Sustained exposure** to audiovisual material seems to benefit vocabulary learning.
 - Higher gains towards the end of the academic year
 - Training effects; familiarity with tests and tasks at the end of the intervention
 - Use of certain learning strategies to learn the TW forms
 - Accumulation of type of input (2h 50 min. vs. 8h 30 min.)
- **L1 subtitles** enhanced form rather than meaning learning → initial stage of learning
- More exposure and vocab recycling needed to acquire the **form-meaning link**.
d'Ydewalle & Van de Poel, 1999; Danan, 2004; Zarei & Rashvand, 2011

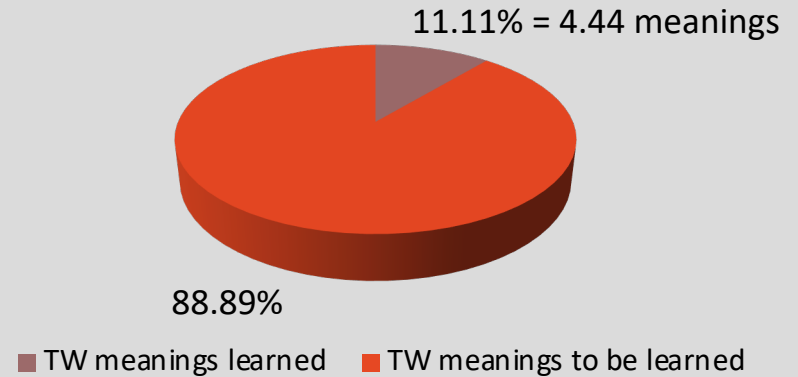
Discussion: Vocabulary

- Increase was **not significant in size**:

Experimental Group TW FORMS - 1 term



Experimental Group TW MEANINGS - 1 term



- Importance of focused and active **learning tasks** to introduce the target vocabulary as well as **opportunities for consolidating** it after the viewing.

Discussion: Language aptitude

- **Aptitude** relevant for **form** learning → ≠ (upper-)intermediate level learners
- Aptitude was **not** significant for **meaning** learning (except Part 1) → marginal significance
- **Test parts** related to **vocab learning** have an influence (except Part 3 form) → type of input exposure
- Learners may have approached the learning task in a rather **explicit** way limiting themselves to memorization of forms: could not probably draw on **deeper learning mechanisms** and **strategies**
- Form vs meaning: there was **more cognitive / attentional involvement** for form → language aptitude came into play
- Meaning learning task too challenging to handle: **cognitive overload**

Pedagogical implications

- In EFL learners from different proficiencies, authentic videos can promote **vocabulary learning**.
- Videos need to be accompanied by a set of focused and active learning **tasks** (~~unguided viewing~~).
- Need to **adapt the materials** to learners' proficiency level and aptitude profile (ATI).
- **Six principles** so as to use videos in the EFL classroom
Webb, 2015
 - 1) Language learning benefits must be clear to everyone involved
 - 2) Learners should be at the appropriate level
 - 3) Listening comprehension needs to be supported
 - 4) Precise comprehension should be a goal, not a requirement
 - 5) Classroom-based viewing as a guide for out-of-class viewing
 - 6) L2 video viewing should be fostered as much as possible

Further research

- Other **language skills**:
 - Syntax and grammar, segmentation abilities, pronunciation, etc.
- Within-group **variability** (e.g. role of vocabulary size)
- Effects of other **IDs** (e.g. working memory)
- Delayed testing to analyse **retention effects**
Gesa & Miralpeix, 2018
- Other **types of captioning** (e.g. bimodal subtitling, keyword captioning)
- **Focused vs. non-focused** learning

Thank
you!

Tack!

- **Spanish Ministry of Economy, Industry and Competitivity**
Funded projects FFI2013-47616-P and FFI2016-80564-R
Pre-doctoral research grant to second author BES-2014-068089
- **Generalitat de Catalunya**
Consolidated Research Group 2017 SGR 560
- **Primary school teachers and students**
School in Mollet del Vallès (Barcelona, Catalonia)
- **GRAL Research Group**
- **Joan Borràs-Comes**

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Theoretical Background

- Greater gains for higher aptitude (LLAMA B - vocabulary learning) in a **lexical test** of **formulaic sequences**.

Serrano & Llanes, 2012

- Positive significant correlations LLAMA F with **lexical diversity**, but not with lexical appropriateness.

Saito, 2017

- Positive significant correlations in highly advanced adult L2 learners in **lexis** and **collocations scores**.

Granena & Long, 2013

- Negative correlations: word-monitoring task tapping **automatic use** of L2 knowledge (except LLAMA D).

Granena, 2012

Instruments - TV series

TERM 1 - *The Suite Life of Zack and Cody* (8 episodes)

Frequency band	Tokens		Types		Word families		Cumulative coverage (in %)
	Raw	%	Raw	%	Raw	%	
1k	18,259	89.96	1,417	55.22	885	49.33	89.96
2k	790	3.89	407	15.86	351	19.57	93.85
3k	209	1.03	139	5.42	127	7.08	94.88
4k	189	0.93	132	5.14	115	6.41	95.81
5k	173	0.85	95	3.70	85	4.74	96.66
6k	86	0.42	55	2.14	52	2.90	97.08
7k	40	0.20	26	1.01	25	1.39	97.28
8k	40	0.20	26	1.01	24	1.34	97.48
9k	59	0.29	19	0.74	19	1.06	97.77
10k	25	0.12	17	0.66	17	0.95	97.89
11-25k	122	0.57	96	3.75	94	5.25	98.46
Off-list	215	1.06	119	4.64	???		99.52
Total	20,297	100	2,566	100	≈1,794	???	≈ 100

Instruments - TV series

TERM 2 - *The Suite Life of Zack and Cody* (8 episodes)

Frequency band	Tokens		Types		Word families		Cumulative coverage (in %)
	Raw	%	Raw	%	Raw	%	
1k	19,760	89.90	1,575	55.38	920	49.28	89.90
2k	830	3.78	456	16.03	381	20.41	93.68
3k	222	1.01	142	4.99	126	6.75	94.69
4k	222	1.01	135	4.75	117	6.27	95.70
5k	194	0.88	108	3.80	97	5.20	96.58
6k	100	0.45	51	1.79	49	2.62	97.03
7k	51	0.23	31	1.09	30	1.61	97.26
8k	29	0.13	22	0.77	22	1.18	97.39
9k	29	0.13	23	0.81	23	1.23	97.52
10k	25	0.11	19	0.67	18	0.96	97.63
11-25k	114	0.52	88	3.11	84	4.49	98.15
Off-list	242	1.10	174	6.12	???		99.25
Total	21,979	100	2,844	100	≈1,867	???	≈ 100

Instruments - TV series

TERM 3 - *Wizards of Waverly Place* (8 episodes)

Frequency band	Tokens		Types		Word families		Cumulative coverage (in %)
	Raw	%	Raw	%	Raw	%	
1k	21,684	90.80	1,460	58.42	859	52.35	90.80
2k	978	4.10	432	17.29	340	20.72	94.90
3k	167	0.70	110	4.40	97	5.91	95.60
4k	176	0.74	103	4.12	91	5.55	96.34
5k	148	0.62	77	3.08	64	3.90	96.96
6k	109	0.46	55	2.20	52	3.17	97.42
7k	54	0.23	29	1.16	28	1.71	97.65
8k	28	0.12	19	0.76	17	1.04	97.77
9k	43	0.18	15	0.60	15	0.91	97.95
10k	42	0.18	20	0.80	18	1.10	98.13
11-25k	110	0.46	63	2.52	60	3.63	98.59
Off-list	220	0.92	108	4.32	???		99.51
Total	23,882	100	2,499	100	≈1,641	???	≈ 100

TW properties

Word class	<i>N</i>
Adjectives	13
Adverbs	1
Nouns	77
Prepositions	1
Verbs	28
TOTAL	120

Cognateness	<i>N</i>
Cognates	14
Non-cognates	106
TOTAL	120

Word frequency (according to COCA)	<i>N</i>
1k	20
2k	28
3k	10
4k	13
5k	14
6k	6
7k	3
9k	4
10k	4
+10k	8
Off-list	10
TOTAL	120

Word frequency (<i>N</i> repetitions episodes)	<i>N</i>
2	16
3	20
4	18
5	19
6	8
7	2
8	2
9	9
10	3
11	6
12	4
14	2
15	1
16	2
17	1
18	2
19	1
+20	4
TOTAL	120

TW properties

Concreteness (mean)	<i>N</i>
1-2	7
2.01-3	23
3.01-4	27
4.01-5	62
Not on the list	1
TOTAL	120

Word frequency (according to SUBTLEX _{US} in %)	<i>N</i>
0-5	66
5.01-10	27
10.01-15	6
15.01-20	4
20.01-25	4
25.01-30	3
30.01-35	2
35.01-40	3
40.01-45	1
45.01-50	1
50.01-60	-
60.01-65	1
65.01-80	-
80.01-85	1
85.01-90	-
90.01-95	1
95.01-100	-
TOTAL	120

Results – RQ2

MLAT-EC & Form: Spearman correlations

MLAT-EC Part	Experimental Group			Control Group			All		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Part 1: Hidden Words	.472*	.226	.450*	.770**	.142	.185	.639**	.210	.342*
Part 2: Words in Sentences	.512**	.478*	.508*	.388	.221	.158	.408**	.270	.316
Part 3: Finding Rhymes	.419*	.223	.444*	.448*	.453	.713**	.453**	.274	.445**
Part 4: Number Learning	.564**	.207	.557**	.395	.486*	.478	.531**	.343*	.581**
TOTAL	.614**	.365	.574**	.648**	.384	.415	.650**	.374*	.527**

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Results – RQ2

MLAT-EC & Meaning: Spearman correlations

MLAT-EC Part	Experimental Group			Control Group			All		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Part 1: Hidden Words	.315	.245	.396	.533**	.260	.250	.464**	.278	.362
Part 2: Words in Sentences	.355	.468*	.300	.475**	.261	.388	.371**	.270	.184
Part 3: Finding Rhymes	.366*	.322	.256	.382	.502*	.162	.418**	.332*	.160
Part 4: Number Learning	.020*	.256	.380	.366	.280	.285	.419**	.270	.359*
TOTAL	.514**	.438*	.360	.572**	.415	.339	.522**	.379*	.319

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Results – RQ2

MLAT-EC & Form: Spearman correlations

MLAT-EC Part	Experimental Group	Control Group	All
	Average T1+T2+T3	Average T1+T2+T3	Average T1+T2+T3
Part 1: Hidden Words	.335	.429	.386*
Part 2: Words in Sentences	.517*	.181	.256
Part 3: Finding Rhymes	.447	.380	.345
Part 4: Number Learning	.596**	.246	.470*
TOTAL	.579*	.313	.467*

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Results – RQ2

MLAT-EC & Meaning: Spearman correlations

MLAT-EC Part	Experimental Group	Control Group	All
	Average T1+T2+T3	Average T1+T2+T3	Average T1+T2+T3
Part 1: Hidden Words	.347	.205	.293
Part 2: Words in Sentences	.280	-.023	.077
Part 3: Finding Rhymes	.283	.206	.213
Part 4: Number Learning	.401	.187	.293
TOTAL	.419	.152	.252

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Limitations

- **Post-task effect:** drawing learners' attention to the TWs and affecting their processing
- **No control groups** watching videos without subtitles
- Some TW properties could not be totally controlled for
- **Classroom environment** (e.g. different teachers, compulsory attendance, no online measuring, etc.)

However... the study

- Puts theoretical principles to the test (DCT, CTML and CLT)
- Includes 'large quantities' of multimodal input (**longitudinal study**)
- Connects vocabulary learning from video viewing to IDs
- Uses a **pedagogical intervention** (specially-tailored materials)
- Non-adults EFL learners (under-researched population)
 - New data on: vocabulary learning and language aptitude
- **Positive preliminary results:**
 - 'Fun' experience, not detrimental to learning (~~CGs~~ → EGs)
 - In-class deliberate learning from video viewing as the starting point for more out-of-class incidental vocabulary acquisition

Webb, 2015