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## Multimedia Instruction & Language Learning Attitudes: A Study with University Students<sup>1</sup>

### Enseñanza multimedia y actitudes hacia el aprendizaje de lenguas en contexto universitario

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### Abstract

This study examined the effects of two types of Multimedia Instruction (MI) and learners' second language (L2) proficiency on language learning attitudes. During four weeks, university learners of French received MI on the distinctive use of the perfective and the imperfective past in one of the four following conditions: learners with low L2 proficiency level exposed to MI with ( $n=17$ ) or without language awareness tasks ( $n=17$ ), and learners with intermediate L2 proficiency level exposed to MI with ( $n=14$ ) or without language awareness tasks ( $n=28$ ). Before and after the experiment, participants completed the Attitude/Motivation Test Battery (AMTB). Non-parametric analyses revealed a positive enhancement of classroom-related attitudes only among intermediate learners exposed to MI without Language Awareness Tasks. Nevertheless, the results showed similar as well as stable attitudes towards language learning in all the experimental conditions.

**Keywords:** Second language learning, multimedia instruction, learner attitudes.

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## Resumen

Este estudio examinó el impacto de dos tipos de enseñanza multimedia (MI), implementada con estudiantes de distintos niveles de competencia en Francés, en diferentes tipos de actitudes hacia el aprendizaje de una lengua extranjera. Durante cuatro semanas, los participantes trabajaron con ambientes multimedia que favorecían el aprendizaje de los tiempos verbales en cuatro condiciones experimentales. Estudiantes con poco conocimiento ( $n=17$ ) o conocimiento intermedio ( $n=14$ ) de los tiempos verbales utilizaron MI que permitía el empleo comunicativo y la sensibilización lingüística hacia estas estructuras (MI+LATS). Otros estudiantes con poco conocimiento ( $n=17$ ) o conocimiento intermedio ( $n=28$ ) de los tiempos gramaticales utilizaron MI que sólo permitía el empleo comunicativo de las estructuras (MI-LATS). Los análisis no-paramétricos de una prueba actitudinal, que los estudiantes respondieron antes y después del experimento, sólo revelaron cambios positivos en las actitudes hacia la clase, en los estudiantes de nivel intermedio en la condición MI-LATS.

**Palabras clave:** Aprendizaje de lenguas, enseñanza multimedia, actitudes de aprendizaje.

## I. Introduction

Multimedia instruction (MI) can be defined as instructional procedures that integrate online or onsite computer environments where the combination of text, sound, images, and interactivity in learning tasks helps students advance their second language (L2) knowledge (Plass & Jones, 2005). To favour MI language education, the positive attitudes that L2 learners show toward the Computer-Assisted Language Learning (CALL) materials have been emphasized (e.g., Leakey & Ranchoux, 2006; Sagarra & Zapata, 2008).

In previous research, the examination of learner attitudes has constituted an *ad hoc* component, where the conceptualization and design have not directly built upon the relationship between MI and L2 attitudes. For research to be informative with respect to the relationship between computers and learner attitudes, its constructs and design should be directly linked to previous L2 theoretical and empirical work so as to address the variables influencing the attitudinal results (see Reeder, Heift, Roch, Tabyanian, & Gözl, 2004). In this regard, the results from CALL research point out the need to address different types of variables that can interact in MI (see Ayres 2002; Mahfouz & Ihmeideh, 2009). While the examination of all the variables intervening in CALL instruction is difficult, if indeed it is even possible (Reeder et al. 2003, p. 261), this study will address the following three variables.

The main variable of this study relates to the type of L2 attitudes on which MI can have an influence. While there is not yet a consensus on the attitudes to explore (e.g., Ayres, 2002; Mahfouz & Ihmeideh, 2009; VanAacken, 1999), some L2 investigations have built upon Gardner's (1985a, 1985b) socio-educational model of learner motivation and attitudes. This model differentiates between learner attitudes towards the learning of a particular group's language, the L2 learning itself, and the learning context. The first attitude type is part of the *integrativeness* construct and reflects the learners' desire to acquire a L2 to integrate into the L2 community. The second attitude type includes attitudes toward L2 learning, which are part of the *learner motivation to learn the L2*. These attitudes denote learners' willingness to make efforts during the learning process. Finally, *attitudes toward the L2 learning context* refer to learner appreciation of the course instructor and the French course.

Congruent with this differentiation, in a meta-analysis conducted with 75 research samples including 10,489 participants, Masgoret and Gardner (2003) found a strong correlation between learners' motivation, which involves attitudes toward L2 learning, and L2 achievement. Weaker correlations were found between L2 achievement and integrativeness, which reflects learner

attitudes toward the L2 speakers, and between L2 achievement and attitudes toward the learning context (see also Gardner, Lalonde, & Moorcroft, 1985; Gardner & MacIntyre, 1985; Gardner, Tremblay, & Masgoret, 1997). Based on these results, various authors highlight the importance of exploring in MI the attitudes that strongly correlate with L2 learning (Ayres, 2002; Mahfouz & Ihmeideh, 2009; VanAacken, 1999).

The second variable to explore during MI is the type of instruction that learners receive. Following Krashen's (1992, 1994) comprehensible input hypothesis, MI research has provided learners with rich exposure to the L2 in meaning-based tasks built upon different media features (Plass & Jones, 2005, p. 469). Studies have examined grammar and lexical growth, for instance, when the target linguistic elements are visually enhanced through textual highlights, glosses, captioning or hyperlinks in the production and comprehension tasks or when the completion of the multimedia tasks pushes learners to process the target L2 elements for meaning (Izquierdo, 2014).

With the exception of a few studies (e.g., Sanz, 2004; Sanz & Morgan-Short, 2004), learners' exposure to MI has been fostered without tasks that overtly draw learner attention to the L2 targets. Yet, in L2 acquisition research, *language awareness tasks* (LATS), or tasks designed to overtly raise learner awareness of the relationship between the L2 forms and their communicative function, are recommended (Morales & Izquierdo, 2011). While several issues remain to be addressed (Ellis, 2001; Simard & Wong, 2004), L2 acquisition reviews and meta-analyses indicate that L2 instruction including LATS leads to stronger L2 learning effects than L2 instruction without LATS (e.g., Lyster, 2004; Spada & Tomita, 2010). However, a distinction should be drawn between LATS and computer-based drills (Chapelle, 1998, 2001). LATS raise learners' awareness of the form and function of L2 forms in meaning-oriented tasks. They constitute a step within an instructional sequence providing learners with sustained exposure to L2 form-meaning (Lyster, 2004; Simard & Wong, 2004). Drills, however, are isolated computer-based decontextualized mechanical exercises, which do not foster the communicative value of L2 forms (Chapelle, 2001). Krashen (1992, 1994), moreover, has stated that L2 instruction including overt attention to L2 grammar is detrimental for learning, as it increases learner anxiety and decreases learning interest.

Finally, the third variable of this study is the level of L2 competency at which learners receive MI. In studies exploring MI and L2 lexical development, the *ad-hoc* examinations of learner attitudes have pointed to similar attitudes across all learners irrespective of L2 knowledge differences. Kawauchi (2005), for instance, examined the effects of computer-enhanced lexical growth among learners from two L2 levels. The analyses of the participants' gains pointed to better scores among learners in the lowest level; yet, learners' appreciation of the computer instruction was positive and similar irrespective of their L2 level (see also De la Cruz & Izquierdo, 2014).

In contrast to these attitudinal results, a recent study revealed that L2 learners' grammar mastery influenced interest in MI task completion (Izquierdo, 2007). Based on the patterns of L2 French past-tense development (see Bardovi-Harlig, 2000; Harley, 1992), Izquierdo (2007) exposed learners from two past-tense proficiency levels to one of two sets of MI experimental materials, including four one-hour lessons teaching the perfective and imperfective past: *passé composé* and *imparfait*, respectively. Through meaning-based tasks, Set 1 exposed learners to past-tense forms representing past-tense emerging use. These forms require the perfective with telic predicates, whose meaning implies that the action must come to an end in order to occur (e.g., to eat an apple, to arrive, to open a book), and the imperfective with atelic predicates (e.g., to be Mexican, to watch TV, to walk in a park), which are verbal predicates denoting a permanent state or actions that do not have an inherent end (Andersen, 1991, 2002), as Example 1 illustrates.

### Example 1. Emerging use of L2 French past tense

- |   |                                  |
|---|----------------------------------|
| 1.a. <i>Il s'est reveillé</i>           | He wake+perfective up            |
| 1.b. <i>Il a courru deux kilomètrés</i> | He run+perfective two kilometres |
| 1.c. <i>Il étáit content</i>            | He be+imperfective happy         |
| 1.d. <i>Il est resté à la maison</i>    | He stay+imperfective home        |

Set 2 included the same meaning-oriented multimedia tasks, but required an advanced use of the perfective and imperfective forms. In these forms, the learners mark the perfective past with atelic predicates and the imperfective with telic predicates (Andersen, 1991, 2002), as Example 2 illustrates.

### Example 2. Advanced use of the L2 French past tense

- |   |                                    |
|---|------------------------------------|
| 2.a. <i>Il se réveilláit</i>            | He wake+imperfective up            |
| 2.b. <i>Il courráit deux kilomètrés</i> | He run+imperfective two kilometres |
| 2.c. <i>Il a été content</i>            | He be+perfective happy             |
| 2.d. <i>Il est resté à la maison</i>    | He stay+perfective home            |

The analyses of learner performance throughout the MI materials revealed larger error rates among the less proficient learners using Set 2 and more advanced learners using Set 1. In these conditions, the participant dropout rate during the experiment was higher. Learner answers in a questionnaire and informal interviews evaluating the suitability of the environments showed that the less proficient learners using Set 2 felt overwhelmed with the L2 level of the materials, whereas the most past-tense proficient learners using Set 1 reported interest loss in task completion, as they felt they were not learning.

## II. Method

Based on these issues, this study examined the interplay between the type of MI, L2 proficiency level and different types of L2 learner attitudes. Specifically, the purpose of this study was to identify the effects of two types of MI (i.e., MI with or without LATS) among learners of French from two L2 proficiency levels (i.e., low or intermediate) on two types of L2 learner attitudes (i.e., attitudes towards L2 learning or towards the L2 class).

*Participants.* A total of 76 participants, who were enrolled in five different sections of a BA in Modern Languages, participated in the study. In addition to French, they were learning English and Italian as part of the BA program. The French courses focused on the development of L2 communication, linguistic awareness, and cultural knowledge. The teachers rarely used multimedia CD-ROMs or presentations to cover the course topics. Most of the learners ( $n=70$ ) were between 19 and 24 years old ( $M_{age}=21$ ,  $SD=2$ ). There were 14 male and 62 female learners. Over half of the participants ( $n=44$ ) had just begun learning French in the BA, whereas 32 had learned French in language institutes.

*Treatment Materials.* Two sets of multimedia materials were developed to teach the distinctive use of the French perfective "*passé composé*" and imperfective "*imparfait*." The perfective marks the completeness of events, whereas the imperfective indicates the manner in which events

unfold (i.e., habituality, continuity, progression). These forms were selected, because their contrastive use constitutes a documented L2 acquisition challenge. In immersion programs in Canada (Harley, 1992; Harley & Swain, 1978) and language classes in North America (Izquierdo & Collins, 2008; Izquierdo, 2009, 2014) and Europe (Howard, 2001, 2002), learners with high L2 proficiency levels often exhibit a preference for the use of emerging past-tense forms (See Example 1) in contexts where the French native speakers would prefer forms characterizing the advanced use of the past tense (See Example 2).

To expose learners to the target forms, two sets of MI materials were designed. Set 1 operationalized MI without Language Awareness Tasks (MI-LATS), whereas Set 2 was designed to include MI with Language Awareness Tasks (MI+LATS). Both sets included the same contexts ( $n=96$ ) for the treatment of emergent and advanced perfective and imperfective forms. Two silent episodes of The Pink Panther Show were used to contextualize the use of the past tense forms. Lesson 1 and 2 built upon the *Put-Put, Pink* episode (Ryan, 1968), whereas Lessons 3 and 4 dealt with the *Pink Panic* episode (Dunn, 1967). Table I displays MI material organization.

Table I. Experimental MI material organization

Condition	Lesson	Material	Lesson Focus
MI-LATS	1	CD-ROM	Put, put pink plot comprehension
	2	PPT	Put, put pink plot discussion
	3	CD-ROM	Pink panic plot comprehension
	4	PPT	Pink panic plot discussion
MI-LATS	1	CD-ROM	Put, put pink plot comprehension
	2	PPT	Discussion of the Put, put pink plot & past-tense forms needed to narrate the events
	3	CD-ROM	Pink panic plot comprehension
	4	PPT	Discussion of the Pink panic plot & past-tense forms needed to narrate the events

Set 1 exposed learners to the use of the past tense through meaning-based MI via comprehension and production tasks only. Following the design of previous MI studies (Izquierdo, 2007, 2014), Lessons 1 and 3 were implemented through comprehension-based tasks using a CD-ROM application, which the participants used individually under teacher surveillance in the computer lab during in-class time. The application required learners to identify a series of sentences about the lesson video story as true or false. Throughout the application, interactive annotations with definitions and pictures were provided in the lower part of the screen for potentially unknown words. The application presented the video-cartoon in eight segments. Prior to watching each segment, learners read four statements about the story (Figure 1). After the segment, the four statements were presented again. If learners were ready to answer, they moved through a series of screens to indicate, using true or false push buttons, the veracity of the statements. Correct answers led to a cheering statement and feedback on the video cartoon plot. No feedback on form was provided on the CD materials (for a discussion on the distinction between feedback on form and meaning, see Lyster & Izquierdo, 2009). If the answer was not correct, an incorrect selection statement and a textual and a pictorial explanation were provided (see Izquierdo, 2014, p.200).

During Lessons 2 and 4, the production tasks were implemented using PowerPoint (PPT) presentations. These lessons were teacher-fronted and acted as classroom follow-up lessons to help learners consolidate Lessons 1 and 3. For each lesson, a PPT including 64 true/false sentences about the story plot was used. Each sentence was presented on a PPT slide (See Figure 1). After reading two sentences, learners worked in triads to discuss the sentence veracity. Then, triads discussed their answer with the class. Finally, the teacher clicked on the PPT presentation to show the target sentences and pictures from the cartoon to confirm or dismiss the class answers. In order to help learners visually perceive the target forms, the verbs with the perfective were highlighted in blue and the verbs in imperfective were in green.

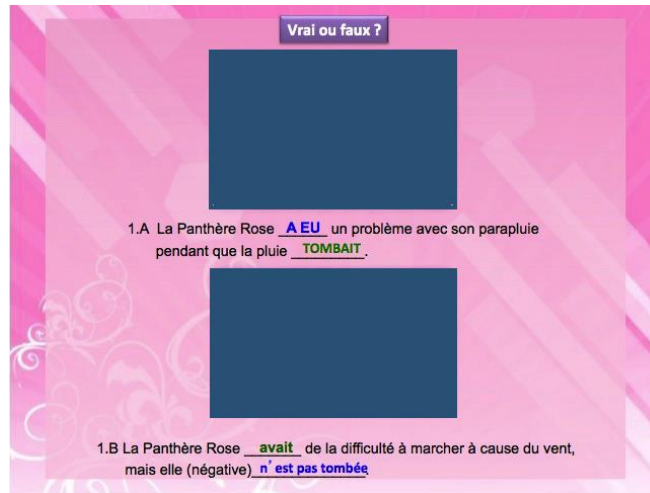


Figure 1. True/false sentence PPT slide in MI-LATS (images excluded due to Copyright)

Set 2 exposed learners to meaning-based MI with LATS. Following the design of L2 studies including LATS that led to significant L2 learning effects in regular classroom contexts (see Lyster, 2004), this MI type included tasks providing learners with opportunities to discuss the form-meaning relationship of the past tense in sentences embedded in meaning-oriented contexts.

The comprehension-based tasks from Lessons 1 and 3 in Set 1 were retained in Set 2 to present identical meaning-oriented contexts across the experimental sets. Nevertheless, the production tasks in Lessons 2 and 4 from Set 1 were slightly modified for Set 2 to help learners reflect upon the use of L2 past-tense forms in the true/false meaning-oriented sentences. In the PPT sentences, the verbs were removed and presented on the slide margin. In addition, an image from the video cartoon was presented to illustrate the event referred to in the sentence. After the teacher presented two sentences, the learners, again in triads, agreed on the verb missing in the sentence and the past marker rendering the story event referred to in the video-cartoon image. Then, the learners discussed their verb and past tense choice. After the discussion, the teacher clicked on the PPT to complete the sentence and checked the class' answer.

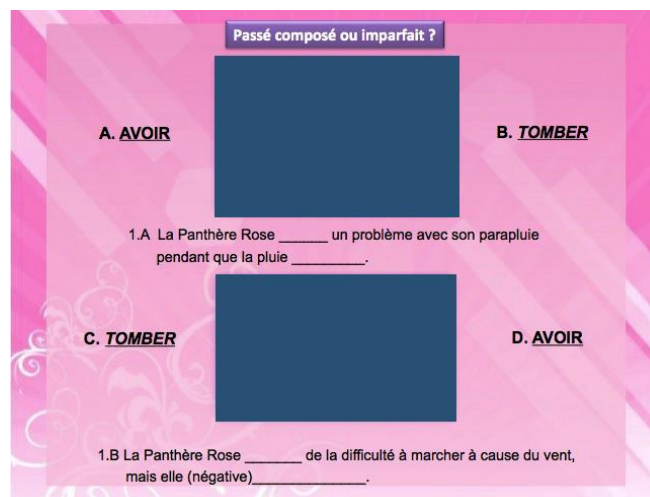


Figure 2. True/false sentence PPT slide in MI-LATS (images excluded due to Copyright)

During a three-hour workshop, the researchers presented the project and the materials to the participating lecturers, who agreed to implement one of the MI sets in their classes, as their syllabi required them to review the past tense forms. The lecturers selected their corresponding MI set in line with their teaching preference. Set 1 was implemented in three French sections, whereas Set 2 was implemented in two sections. Each set included an implementation manual. In order not to bias the project results, the lecturers agreed to cover the French past using the MI set only.

*Proficiency test.* Following the methodology of L2 developmental studies (see Bardovi-Harlig, 2000; Collins, 2002), a past-tense knowledge test was designed to group learners into the two proficiency levels<sup>2</sup>. It included 20 written passages with short dialogues and narratives. In the passages, the verbs were removed from the sentences and provided in parentheses. Based on each passage story plot, learners inflected the verbs for present, past or future, as the excerpt below illustrates.

Excerpt from the proficiency test (Situation12)

A: Hein ! J'ai entendu dire que ton père a gagné le loto.

B: Oui. Durant le week-end, je (visionner) \_\_\_\_\_ mon film favorite quand ma sœur m'a téléphoné pour m'annoncer la nouvelle.

Excerpt translation

A: Hey, I heard your dad won the lottery!

B: Yes. Last weekend, I (watch) \_\_\_\_\_ my favourite film when my sister rang me up to share the news.

The test included 50 obligatory contexts for the use of the perfective and imperfective and 18 distractors eliciting present ( $n=9$ ) and future ( $n=9$ ) forms. The use of the target L2 forms across the 74 verbs was piloted with nine university-educated Francophones (aged 28-50 years). To avoid high scores resulting from biased production of emergent past-tense forms only, the 50 past-tense items included a balanced number of contexts (25 for each) for the emergent and advanced use of the perfective and imperfective (for details, see Izquierdo & Collins, 2008).

The learners received one point for each correct answer for both the perfective and imperfective items. Thus, their scores could range from 0 to 50. Using the Francophones' answers, two research assistants scored each test independently. The comparisons between the research assistants' scores yielded a disagreement rate of 39% (30/76). Yet, an inter-rater reliability check for the overall test score agreement of the two research assistants yielded a high Pearson correlation coefficient,  $r=.996$ ,  $p<.001$ . Nevertheless, the assistants scored the problematic tests again and reached a consensus.

*Attitude/Motivation Test Battery (AMTB).* To examine the learner attitudes toward the L2 class and L2 learning, Gardner's (1985b) revised version of the AMTB was chosen, as its items were designed for L2 learners of French and were validated in various international contexts. The AMTB was developed for English-speaking Canadian learners of French. Thus, some sections elicited opinions toward French Canadians, interest in integrating in French-speaking Canada and the utilitarian value of French in Canada. Due to this issue, only the seven AMTB sections presented in

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<sup>2</sup> Further information on the development and use of the test to determine the L2 past-tense stage of learners of French can be found in Izquierdo and Collins (2008).

Table II were retained<sup>3</sup> as they related to the learner attitudes of interest for the study. The test was translated to Spanish and piloted with learners of French at the participating university's language center. The piloting revealed no problems with the Spanish version.

Table II. AMTB sections retained for the study

Section	Focus	Number of items	Score Range
1	Interest in foreign languages	9	9-63
2	Attitudes toward learning French	10	10-70
3	French class anxiety	5	5-35
4a	French course – evaluation	10	10-70
4b	French course – difficulty	5	5-35
4c	French course – utility	5	5-35
4d	French course – interest	5	5-35
		49	49-343

From Sections 1 to 3, answers related to agreement reactions with a statement (Example 3). The items in the remaining sections elicited the learners' evaluative reactions toward the French class (Example 4; the scores underneath the scale choices were omitted in the test). For all items, the scores ranged from one to seven depending on how positive the expressed opinion was. Two counter-balanced versions of the AMTB were used. The same items were presented in reverse order. During the pre-test, half the learners answered version A and the other half answered version B. During the post-test, the test versions were alternated.

Example 3. Section 2, Item 1 (Gardner, 1985b, pp. 17-18)

Circle the alternative below the statement which best indicates your feeling.

If I were visiting a foreign country, I would like to be able to speak the language of the people.

Strongly Disagree 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
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Example 4. Section 16, Item 1 (Gardner, 1985b, pp. 23, 25)

Place a checkmark in the scale below to rate your French course.

1. My French course is...

Meaningful	7	6	5	4	3	2	1	Meaningless
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The learners received one score for each of the seven AMTB sections retained for the study, as the value given through the evaluation reactions were added up by section. For each testing occasion, seven scores were computed per learner. In total, 1064 scores were included in the statistical analyses. Two research assistants scored each test independently. Although the comparisons between the research assistants' scores yielded a disagreement rate of 1% (11/1064), an inter-rater reliability check for overall agreement on the answer codifications revealed a Cronbach's alpha coefficient of 1. The assistants computed the problematic scores again to reach a consensus.

*Experimental Conditions.* Within their French sections, participants were classified into one of two past-tense proficiency levels based on the results of the past-tense test. In the test, the scores

<sup>3</sup> Item 2 from Section 2 was excluded, as it related to the Canadian context.



ranged from 1 to 44 points. To create two equal score ranges, the split point was set at 22. Participants with a score between one and 22 points were classified at a low past-tense proficiency level ( $n=34$ ,  $M=16.65$ ,  $SD=3.76$ ). Participants who scored over 22 points were classified at an intermediate past-tense proficiency level ( $n=42$ ,  $M=31.17$ ,  $SD=6.70$ ). The combination of the learner past-tense proficiency and the MI implemented in the French sections led to four experimental conditions: learners with low past-tense proficiency exposed to MI+LATS ( $n=17$ ,  $M=16.35$ ,  $SD=3.67$ ) and MI-LATS ( $n=17$ ,  $M=16.94$ ,  $SD=3.93$ ); and learners with intermediate past-tense proficiency exposed to MI+LATS ( $n=14$ ,  $M=29.79$ ,  $SD=6.29$ ) and MI-LATS ( $n=28$ ,  $M=31.86$ ,  $SD=6.91$ ).

Two-way ANOVAs were conducted to identify significant effects for L2 past-tense knowledge and type of MI across conditions. With  $\alpha=.05$ , the results yielded a significant effect for past-tense proficiency only,  $F(1,72)=113.67$ ,  $p<.001$ , with a large Cohen's effect size,  $d=2.78$ , and thus, confirmed that learners classified at an intermediate level had more control over past-tense forms than their less proficient counterparts.

### III. Analyses & Results

*Statistical Analyses Procedures.* To identify significant effects between and within the experimental conditions, the data from each AMTB section were analysed independently using three types of non-parametric analyses. Non-parametric tests were selected due to the ordinal nature of the AMTB rating scales (Romano, Kromrey, Coraggio & Skowronek, 2006). The Wilcoxon test was used to identify attitudinal changes within each experimental condition, as the data were elicited from the same learners but at two different testing times (see Fields, 2005). To examine attitudinal differences between the four experimental conditions, the Kruskal-Wallis test was used, as the data came from more than two groups during the same testing time (Fields, 2005). Effects were significant when their  $p$  was smaller than  $\alpha=.05$ .

When the Kruskal-Wallis test revealed a significant effect, two *post-hoc* pairwise comparisons were conducted using the Mann-Whitney test. One comparison was made between the learners with low past-tense proficiency exposed to MI+LATS and MI-LATS. The second comparison was made between learners with intermediate past-tense proficiency exposed to MI+LATS and MI-LATS. The Mann-Whitney test was selected, as the data came from two experimental conditions during the same testing time (Fields, 2005). To avoid the Type I error during the *post-hoc* comparisons, the  $\alpha$  was adjusted to .025 using the *Bonferroni* method (Fields, 2005). This alpha resulted from dividing .05 by the number of *post-hoc* comparisons.

For significant group differences, the effect size estimate,  $r$ , was computed by dividing the  $z$ -score test statistic provided by the statistical software, *SPSS* v.18, for the group comparison by the square root of the total number of participants involved in the group comparison. An  $r$  below .3 represented a small effect size; an  $r$  between .3 and .5 indicated a medium effect size; finally, an  $r$  above .5 indicated a large effect size (Fields, 2005).

*AMTB version score differences.* Prior to analyzing the effects of the MI experimental conditions on the attitudinal scores, Mann-Whitney analyses were conducted on the global AMTB scores to identify differences between AMTB versions at each testing time. The analyses yielded no significant differences between version A ( $n=40$ ,  $Mdn=283$ ) and version B ( $n=36$ ,  $Mdn=273$ ) during the pre-test,  $U=569$ ,  $p=.116$ . Neither did the analyses reveal a significant difference between version A ( $n=37$ ,  $Mdn=278$ ) and B ( $n=39$ ,  $Mdn=275$ ) during the post-test,  $U=713$ ,  $p=.930$ . Thus, the versions were pooled.

*AMTB score differences between experimental conditions during the pre-test.* Across the four experimental groups, the Kruskal-Willis test results in Table III indicated similar levels of interest

in foreign languages, attitudes toward learning French, French course evaluation, French course difficulty, and French course utility in the pre-test. The pre-test score analyses pointed to between-groups differences only with respect to learners' anxiety and interest in the class. Yet, the *post-hoc* comparisons presented in Table IV did not reveal significant differences between MI-LATS and MI+LATS within each past-tense condition. In terms of learner anxiety, the *post-hoc* comparisons revealed similar anxiety levels between learners at early stages of past-tense marking exposed to MI+LATS and MI-LATS ( $U=107$ ,  $p=.195$ ) and between learners at late stages of past-tense marking exposed to MI+LATS and MI-LATS, ( $U=123.5$ ,  $p=.05$ ). In terms of course interest, the *post-hoc* comparisons did not reveal significant differences between learners at early stages of past-tense marking exposed to MI+LATS and MI-LATS ( $U=96$ ,  $p=.09$ ) or between learners at late stages of past-tense marking exposed to MI+LATS and MI-LATS, ( $U=122.5$ ,  $p=.04$ ).

Table III. AMTB result medians for experimental conditions

AMTB Section	Condition							
	Low Proficiency				Intermediate Proficiency			
	MI-LATS (n=17)		MI+LATS (n=17)		MI-LATS (n=28)		MI+LATS (n=14)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Foreign language interest	56	58	61	61	61	61	61	60
Attitudes toward learning French	64	64	66	65	67	68.5	68.5	67
French class anxiety	24	19	26	23	16.5	14	22.5	18
French course – evaluation	46	50	57	57	54	60.5	58.5	61.5
French course – difficulty	23	25	24	21	21.5	21	20.5	20
French course – utility	28	29	33	31	32.5	33.5	31	34
French course – interest	20	21	23	25	21	27	26.5	28

Table IV. Kruskal-Willis test results for AMTB pre-test score differences between groups

Section Number	Section Focus	Df	H	P
1	Foreign language interest	3	5.94	.12
2	Attitudes toward learning French	3	4.86	.12
3	French class anxiety	3	9.71	.02
4 <sup>a</sup>	French course – evaluation	3	5.75	.12
4b	French course – difficulty	3	2.42	.49
4c	French course – utility	3	5.50	.138
4d	French course – interest	3	9.34	.03

Table V. Wilcoxon Analyses for Significant Differences between Testing Times

Past-tense proficiency	AMTB Section	MI			
		+LATS		-LATS	
		z	p	z	p
Low	Foreign language interest	-.57	.57	-1.37	.17
	Attitudes toward learning French	-.22	.83	-1.14	.26
	French class anxiety	-.28	.78	-1.48	.14
	French course – evaluation	-.10	.92	-.85	.39
	French course – difficulty	-.24	.81	-.49	.62
	French course – utility	-.94	.35	-.51	.62
	French course – interest	-.31	.76	-.54	.59
Intermediate	Foreign language interest	-.28	.78	-1.10	.27
	Attitudes toward learning French	-.87	.38	-2.13	.03
	French class anxiety	-1.29	.19	-1.48	.14
	French course – evaluation	-1.23	.22	-2.58	.01
	French course – difficulty	-.67	.51	-.49	.621
	French course – utility	-1.49	.13	-.51	.614
	French course – interest	-.83	.41	-3.80	.01

*AMTB score changes within experimental conditions.* The Wilcoxon results, presented in Table V,

revealed that neither type of MI led to attitude changes among low-proficient learners from pre-test to post test. Yet, within the more proficient learners, the analyses revealed the evolution of different attitudes depending on MI condition (see Table 3). MI+LATS did not alter any of the learner attitudes between the pre and post-tests. However, MI-LATS led to positive changes with respect to attitudes toward learning French,  $p=.03$ ,  $r=.39$ , French course evaluation,  $p=.01$ ,  $r=.49$ , and French course interest,  $p=.01$ ,  $r=.72$ .

## IV. Discussion

The attitudes teachers and students hold toward technology can intervene in the successful integration of computers in educational practices (Bax, 2003; O'Connor & Gatton, 2003). To expand our understanding of the variables influencing L2 learner attitudes, this study examined the relationship between the type of MI, the L2 learner proficiency profile, and various L2 learner attitude types.

Our results suggest that LATS were well received among the participants in MI, since their use did not alter the various attitude types examined among the learners with different past-tense proficiency levels. The meaning-based MI condition (i.e., MI-LATS), however, prompted positive changes among the most past-tense proficient learners with respect to their attitudes toward learning French, their French course evaluation, and their French course interest. These findings suggest that the MI type can interact with the L2 proficiency of learners affecting different learner attitude types.

These findings are congruent with previous research showing that the MI experience can foster positive L2 learner attitudes toward the instructional materials (e.g., Ayres, 2002; Leakey & Ranchoux, 2006; Sagarra & Zapata, 2008). These results lend support to the need for a differentiation in the attitude types that intervene during computer instruction (e.g., Mahfouz & Ihmeideh, 2009; VanAacken, 1999). They provide support for the arguments that CALL research should explore the manner in which variations in the learner profile and the instructional approach within a computerized learning context influence L2 learner results (Chapelle, 2004; Izquierdo, 2014; Reeder et al, 2004).

While MI positively influenced learners' attitudes toward the L2 class, learner attitudes towards the process of L2 learning remained stable within the meaning-based group during the experiment. Gardner (1985a) and his associates argued that learner attitudes toward the instructional context could vary depending on the learners' likes and dislikes of teaching strategies and the teacher. Learner attitudes toward L2 learning, however, are deeply rooted in the willingness, desire and efforts of learners to learn a new language. Due to this difference, it might then be possible that MI could lead to a gradual development of L2 learner attitudes, where MI would, first, influence classroom-related attitudes and, then, attitudes toward L2 learning. Given the classroom nature of the experiment, the participating teachers' syllabus compliance with time played a determinant role in the length of the MI administered. Thus, future research could address the impact of MI delivered over longer periods of times and sustained instructional approaches on the gradual development of the various types of L2 learner attitudes in classrooms.

The learner attitude responses to MI-LATS were partially congruent with two assumptions behind the study. Building upon Krashen's (1992, 1994) argument that overt instruction on the L2 increases anxiety, learner attitudes were expected to negatively respond to MI+LATS. Yet, the statistical results were not in line with this expectation. The second assumption was that the absence of LATS in MI would foster a large range of attitudinal changes. Nonetheless, as previously discussed, changes were only observed with respect to learner attitudes towards the classroom context.

These reactions towards LATS could relate to the prior instruction experience of the participants. In their L2 program, learners usually complete tasks that overtly draw their attention to L2 communicative competence and linguistic awareness. This learning experience resembled the L2 instructional approach of MI+LATS. Thus, for these participants, MI+LATS represented a change in the instructional modality, since teachers rarely used multimedia, but did not involve an instructional approach change. MI-LATS, however, implied a higher degree of instructional novelty due to a change in the instructional approach, as the learners fully experienced meaning-based instruction with respect to grammar learning, and in a new instructional modality, as the L2 exposure occurred through multimedia. Indeed, studies conducted in various instructional contexts indicate that a change in the instructional approach and modality could lead to divergent attitudes among L2 learners (e.g., Leakey & Ranchoux, 2006; Loucky, 2005; Sagarra & Zapata, 2008). However, research is needed to determine the extent to which the novelty effect can foster long-term L2 learning benefits (Chapelle, 2001).

The attitude changes that MI-LATS fostered among the most proficient past-tense learners provide empirical support for our argument that the stage of L2 grammar development at which learners receive a certain type of MI could have an impact on their attitudes (De la Cruz & Izquierdo, 2014; Izquierdo, 2007, 2014). Unlike our previous studies (Izquierdo, 2007, 2014), in the current study, learners from both L2 past-tense knowledge proficiency levels were exposed to the same level of L2 complexity, as the multimedia materials included an equal number of emergent and advanced developmental forms. Nevertheless, while this exposure might have provided learners in both proficiency conditions with an appropriate L2 learning challenge level, the MI type whereby the target forms were delivered interacted with the L2 learner profile. During the classroom-based tasks, learners needed to interact with their peers in the L2. Among learners in the MI+LATS, one difficulty might have related to the language and terminology required to explain their past-tense choices. Indeed, L2 acquisition research has provided evidence that the language required to talk about the language can intervene with task completion (García-Mayo, 2007). The least proficient learners using MI-LATS also needed the L2 to justify the veracity of the true-false statements and, to do so these learners might have needed lexical and grammatical forms beyond their L2 capabilities.

## V. Conclusion

Our results suggest that attitudinal changes could occur once the learners have attained a late stage of L2 grammar proficiency. Nevertheless, their acquaintance with LATS through their regular classroom-learning experience could have influenced the results. MI+LATS mostly represented an instructional modality change (i.e., multimedia). Yet, MI-LATS involved a change in both instruction type and modality. The most proficient learners could have found extensive opportunities to practice the L2 forms that they were ready for in the meaning-oriented nature of MI-LATS, outside their regular classroom learning conditions. These results point to the importance of varying the instructional materials and tasks as learner proficiency and learning experience evolve. Moreover, they suggest that changes towards classroom-related attitudes prompted through instructional modality might not necessarily foster changes in attitudes intrinsically rooted in the willingness, desire and efforts to learn a new language.

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