



**Title of Project:**

Exploring the Pedagogical Potential of Multimodal Input-Based Tasks: A Study of Captioning, Textual Enhancement, and Working Memory Using Eye-Tracking

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**Project Summary**

Given the important role of learners' attention in second language (L2) acquisition (e.g., Robinson, 2003; Schmidt, 2001), the potential of instructional interventions that draw learners' attention to targeted L2 constructions has been the subject of much research. Of various attention-getting techniques, input enhancement (also known as textual enhancement), which is a type of implicit "focus on form" instruction, has attracted much interest from researchers because of its presumed capacity to direct attention to the target linguistic constructions. The majority of the textual enhancement studies appear to have adopted a reading-based approach (e.g., Izumi, 2002; Lee, 2007; Leow, 1997, 2001; Park, 2004; Shook, 1994; Winke, 2013). That is, the effectiveness of textual enhancement on directing learners' attention to target L2 constructions has been empirically attested when learners receive input through a single modality, reading. So far, however, few studies have examined the pedagogical potential of textual enhancement when it is included in captions, that is, in the context of multimodal activities combining aural, textual, and visual input. This study aimed to fill this gap by assessing the extent to which textually enhanced captions rendered the target linguistic constructions more salient to learners so as to result in drawing their attention to the constructions and promote their development of L2 grammatical knowledge. In addition, given the theoretical assumption that learners' working memory (WM) may play a role in their allocation of attention (Robinson, Mackey, Gass, & Schmidt, 2012), another goal of the present investigation was to shed more light on whether individual differences in working memory mediated learners' allocation of attentional resources to input and development in the use of L2 grammatical knowledge.

This study employed a pretest–posttest–delayed posttest experimental design, with 72 Korean university students who were randomly assigned into a no captions group ( $n = 24$ ), non-enhanced captions group ( $n = 24$ ), and enhanced captions group ( $n = 24$ ). The target L2 construction was the use of the present perfect versus the past simple, in particular, when these constructions were used in reporting news. For the enhanced captions group, the target constructions were typographically enhanced using different colors in the treatment task input. The effectiveness of enhanced input in drawing learners' attention to the target construction was examined using eye-movement data, which was collected with a Tobii X2-60 mobile eye tracker. The experiment was conducted and the data were analyzed using Tobii Studio 3.3.1



software (Tobii Technology, 2015). To measure participants' gains in the knowledge of the target grammatical constructions, both receptive and productive test were employed. The participants' working memory was assessed using six different working memory measures: (a) nonword span task, (b) stop signal task, (c) color shape task, (d) forward corsi block task, (e) backward corsi block task, and (f) automated operation span task.

The total duration of data collection was approximately five months, holding each session individually. Each participant was required to participate in four sessions. In the first session, a general introduction to the study was provided to the participants and their consent to take part in the study was obtained. After completing a background questionnaire, an Oxford Placement Test, which is a general English proficiency test, was administered. During the first session, the participants were also presented with a pretest, which consisted of an oral productive test, a written productive test, and a receptive test. The participants' responses on the oral productive test were recorded using a voice recorder, while written responses were collected for the written productive test. The same procedure was used for an immediate posttest and a delayed posttest. In the second session, the participants completed a series of multimodal input-based tasks, including 24 news clips, followed by an immediate posttest. While performing the tasks, an eye-tracker was used to record participants' eye gaze. In Session 3, working memory measures were administered to the participants. Session 4 took place a month later in which the participants were asked to complete a delayed posttest and an exit questionnaire.

In this study, learners benefited from the presence of captions in developing their use of L2 grammatical knowledge. In line with the accumulated evidence from previous studies reporting the positive effects of captions on L2 listening comprehension and L2 vocabulary learning, this study provided further evidence that the provision of captions is beneficial for promoting L2 grammatical knowledge acquisition. Next, the results showed that textual enhancement was successful in directing learners' attention to the target linguistic constructions. This finding is consistent with the results reported in previous studies that investigated the effectiveness of textual enhancement in reading texts (e.g., Issa et al., 2015; Simard & Foucambert, 2013; Winke, 2013). This study also addressed the question of whether the amount of attention allocated to target linguistic constructions is related to learning target linguistic forms (e.g., Godfroid et al., 2013) by investigating the relationships between attention, operationalized as eye-tracking indices, and gains on three different tests (i.e., an oral productive test, a written productive test, and a receptive test). A number of significant relationships were evidenced between the amount of attention allocated to target linguistic constructions and L2 development. These results indicate that those learners who paid more attention to enhanced constructions were, overall, more likely to achieve higher learning gains. Another aim of this study was to examine the extent to which individual differences in working memory capacity moderated the effects of captions, textually non-enhanced or enhanced, included in multimodal input-based tasks on L2 development. However, in this study, only marginal effects were observed for working memory in attentional allocation and development in L2 grammatical knowledge.

The findings of this research are of pedagogical significance. That is, highlighting target linguistic constructions in captions succeeded in drawing learners' attention and, thereby, promoting L2 learning. Thus, the results of this research suggest that the textual enhancement is valuable and useful as an instructional intervention for language learners, particularly for those who already have prior knowledge of target linguistic constructions. The findings of the present study also provide evidence for the pedagogical value of using captioned videos for instructional purposes. This is an important pedagogical



implication, given that multimedia materials (e.g., podcasts, DVDs and YouTube) are becoming increasingly available and used by many L2 learners in both formal and informal L2 settings.

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