

An Investigation into Textual Input Enhancement and Output Production in Relation to the Noticing of English Relative Clauses: The Case of Iranian EFL Learners

Research Article
pp. 7-27

Somayeh Sadeghi¹
Parviz Maftoon*²
Masood Yazdanimoghadam³

Received: 2020/06/13

Accepted: 2021/02/06

Abstract

Over recent decades, second language acquisition (SLA) researchers have considered attention an important cognitive process mediating second language (L2) learning. The concept of noticing as conscious attention to form has become especially important in the field. The present study explored whether two pedagogical interventions, namely textual input enhancement (TIE) and learners' output production (LOP), in isolation and in combination, promoted learners' noticing and learning of English relative clauses (RC). The study was conducted with a sample of 113 freshmen majoring in English language and literature. The participants were assigned to three experimental groups and the control group based on the treatments they received, +TIE+LOP, +TIE-LOP, -TIE+LOP, and -TIE-LOP. Before treatment, all the participants took a test of English RCs as the pretest. Then, the participants were required to read the reading texts including instances of RCs and take note. While the participants in the +TIE groups read the enhanced input, the participants in the -TIE groups received the unenhanced input. Also, the participants in the +LOP groups were required to carry out output tasks, but the participants in the -LOP groups answered comprehension questions. Consequently, the participants took part in think-aloud processes. Finally, the test of RCs was administered again as the posttest. The findings revealed that LOP positively affected the participants' noticing and learning of RCs. However, TIE was only effective in promoting the participants' noticing, but not learning, of RCs.

keywords: attention, learning, learners' output production, relative clauses, textual input enhancement

* Corresponding Author

¹ Ph.D. Candidate, Department of Language and Literature, Faculty of Humanities and Social Sciences, Science and Research Branch, Islamic Azad University, Tehran, Iran. somsadeghi04@gmail.com

² Associate Professor, Department of Language and Literature, Faculty of Humanities and Social Sciences, Science and Research Branch, Islamic Azad University, Tehran, Iran. pmaftoon@srbiau.ac.ir

³ Assistant Professor, English Department, Garmsar Branch, Islamic Azad University, Garmsar, Iran. mym1300@gmail.com

DOI: 10.22051/lghor.2021.32221.1334

Introduction

Attention as a cognitive process mediating learning has received special interest in the field of second language acquisition (SLA) in the past decades. “As the field of SLA research enters the new millennium, it is becoming increasingly clear that the role of attention is as important to understanding SLA as the role of input” (Simard & Wong, 2001, p. 104). Attention is viewed as a crucial concept for establishing how language input is processed and then internalized by L2 learners (Hama, 2012). Several theoretical claims have been posed for the essential role of attention in SLA (e.g., Robinson, 1995; Schmidt, 1990, 2001; Tomlin & Villa, 1994; VanPatten, 2004). While there is a general consensus on the crucial role of attention, disagreement exists regarding the amount and type of attention needed for learning (Izumi, 2002).

Schmidt’s (1990, 2001) studies on consciousness, awareness, and attention led to the emergence of the Noticing Hypothesis, claiming that “intake is that part of the input that the learner notices” (Schmidt, 1990, p. 139). As such, Schmidt views noticing, which needs learners’ awareness and focal attention, as a necessary condition for L2 learning. However, Schmidt (2001) posits a weaker claim, stating that “people learn about the things that they attend to and do not learn much about the things they do not attend to” (p. 30). In line with Schmidt (2001), considering noticing as the correlate to what psychologists call ‘attention’, noticing and attention are used synonymously in the present study.

Some pedagogical techniques have been proposed for drawing learners’ attention to linguistic items to facilitate L2 learning. Textual input enhancement (TIE) (Sharwood Smith, 1991) is regarded as one of the implicit techniques of focus on form in that the physical appearance of certain elements of a text is typographically modified. The focused form is underlined, bolded, italicized, capitalized, or it is written in a different color, a different font, or a different size. TIE has been the focus of a number of SLA research studies which resulted in mixed findings.

Output production has also been suggested as a way of inducing the learner’s noticing of L2 forms by Swain (1985). The Output Hypothesis by Swain (1985, 1995, 2005) postulates that as learners produce L2, they may “notice that they do not know how to say (or write) precisely the meaning they wish to convey” (Swain, 2005, p. 474), that may consequently draw learners’ attention to L2 features they need in order to find a solution to their interlanguage problems. However, the noticing role of output has been less explored empirically in SLA research.

Literature Review

In the recent decades, a proliferation of SLA studies have investigated the efficacy of TIE and LOP in triggering learners’ noticing of form. The results of the research that has explored the impacts of TIE on learners’ noticing and acquisition of linguistic forms vary greatly. A number of studies have revealed evidence for positive impacts of TIE on acquisition (e.g., Doughty, 1991; Jourdenais et al., 1995; Lee, 2007; Simard, 2009), and on noticing (e.g., Alanen, 1995; Izumi, 2002; Winke, 2013).

LaBrozzi (2014) examined the effect of different types of TIE on recognition of L2 form as well as reading comprehension. One hundred and nine English speakers learning Spanish were divided into the experimental groups, each receiving one type of TIE, and a control group. The results showed that TIE

positively affected the target structure recognition, but comprehension was not affected by the enhancement.

Naseri and Khodabandeh (2019) investigated whether audio-visual input enhancement affect acquisition and correct use of collocation. The results of posttests revealed the positive effects of audio-visual input enhancement on the acquisition of collocation and the enhanced accuracy regarding use of collocation in the narrative writing.

However, some studies have revealed no effect of TIE on either noticing or acquisition (e.g., Leow, 1997, 2001; Leow et al., 2003; White, 1998). For example, Loewen and Inceoglu (2016) explored how TIE affected noticing and acquisition of L2 verb forms by college-level Spanish learners. Noticing of the target forms was measured using an eye tracker. The results showed that TIE did not trigger learners' greater noticing of L2 verb forms, nor did it show higher levels of noticing the Spanish verb forms as reported by the learners. In addition, the enhanced group was not significantly different from the non-enhanced group in terms of intake of the L2 forms.

Still other studies have revealed a negative impact for TIE on comprehension (Lee 2007; Overstreet, 1998). Overstreet (1998) explored the impact of TIE as well as content familiarity on learning Spanish linguistic forms. Overstreet failed to find a beneficial effect of TIE or content familiarity on learning the target forms. Yet, a main negative effect was found for TIE on comprehension.

Research conducted on the noticing role of output has generally investigated if output tasks promoted more noticing and learning of linguistic forms compared with non-output tasks. Generally, these studies have resulted in mixed and inconclusive findings.

Izumi (2002) investigated the noticing role of output in comparison with noticing effects of TIE. Noticing was measured through learners' note-taking. The note-score analyses revealed that TIE significantly affected noticing, but output production did not significantly affect noticing. However, the reconstruction-score analyses indicated the output participants' better noticing of the target structure. The test results indicated no significant learning gains in the TIE only group while output production was found to have positive effects on learning the target structure.

Comparing the impacts of output production with the impacts of input enhancement, Russell (2014) investigated the noticing function of output and whether the noticing and acquisition of the Spanish linguistic forms were related. To measure noticing, the participants underlined the words they considered important during the reading activity. The results showed that output production positively affected noticing of the targeted forms and that pushed output followed by input enhancement improved the participants' learning of the targeted forms. Yet, exposing to input enhancement did not result in acquisition of the target forms.

Amini et al. (2019) investigated what L2 learners noticed throughout their own output and exposure to model texts and how this noticing affected their short-term and long-term writing performance. Learners' noticing of linguistic forms was measured through note-taking during the writing task. The findings showed that noticing improved the learners' grammatical accuracy in that the learners retained the lexical and grammatical features compatible with their own noticing. It was concluded that the learners' output production promoted their noticing of the required linguistic features.

However, Izumi et al. (1999) did not confirm the noticing role of output

production. The participants in the experimental group followed an input-output-input-output treatment in that they read and underlined a short passage containing instances of English past hypothetical conditional. The results showed that the output group was not significantly different from the non-output group in terms of noticing of the targeted form.

The above-mentioned studies have reported mixed results on the impact of TIE and LOP on L2 learning. Such mixed results make it hard to generalize the effectiveness of TIE and LOP. In addition, in the TIE research, the first assumption underpinning TIE, i.e., inducing learners' noticing of the targeted form, "has more or less been eschewed" in that the majority of these studies have only used acquisition measures and considered the effectiveness of TIE equal to its efficacy to generate learning (Han et al., 2008, p. 601), and no measure of noticing has been used. According to the noticing hypothesis, for TIE to contribute to L2 acquisition, learners are required to notice the target form; thus, it is essential to indicate that noticing actually occurs (Ellis, 2008). Also, the results of the few studies that have measured noticing were inconclusive, with some studies finding positive effects (Izumi, 2002; Jourdenais et al., 1995; Winke, 2013) and others finding no effects (Leow, 2001) of TIE on noticing.

Moreover, although a large bulk of research has addressed the function of output production in learning L2 in recent years, the noticing function of output has been of relatively little interest. Meanwhile, the few studies conducted to explore the noticing function of output resulted in mixed findings. Also, different task types, different proficiency levels, and different target forms were investigated in these studies. Thus, more studies are needed to throw more light on the role of output tasks in SLA.

Taking account of these gaps in the literature, the present study, drawing on Izumi's (2002) study, incorporates measures of noticing as well as learning measures in exploring the impact of TIE and LOP on acquiring the target structures in Iran's SLA context. More specifically, the impact of TIE and LOP on learners' noticing and learning of English RCs are examined in isolation and in combination. However, the present study is different from Izumi's, employing a different output task which has less been empirically investigated, i.e. text reconstruction cloze task. Also, an important modification to Izumi's (2002) study is that this study provides a different operationalization of noticing through triangulated data collection. A current challenge to the studies on noticing is the difficulty in measuring noticing. As no single measure could provide an absolute account of learners' noticing (Uggen, 2012), the present study employs a qualitative measurement as well as the quantitative measurement of noticing in order to tap more precisely into what linguistic forms learners notice. With this end in view, the following research questions are investigated in the present study, with RQ 1 addressing noticing and RQ 2 addressing learning:

RQ1: Do pedagogical interventions TIE, LOP, and TIE+LOP have any statistically significant effect on the learners' noticing of the English RCs?

RQ2: Do pedagogical interventions TIE, LOP, and TIE+LOP have any statistically significant effect on the learners' learning of the English RCs?

RQ3: What do learners notice while comparing their production with the L2 input?

RQ4: What do learners notice while reading the L2 text for comprehension?

Method

Participants

The participants were freshmen majoring in the English language and literature at Payam Noor University of Sari and Islamic Azad University of Ghaemshahr in Iran. The participants, aged 18-34 years, included both males and females. Convenience sampling was used in that intact classes were selected and each class was randomly assigned to the control group or one of the treatment groups. The participants in all groups had similar educational programs. The main consideration was to select the learners who indicated emerging knowledge of English RCs but they had not developed full mastery of the target structures. To ensure that the participants qualified to be included in the data analyses, their knowledge of RCs was assessed through a test of English RCs, which also served as the pretest. The participants whose scores were higher than 90% on the pretest were considered as having mastery on the target structures and were eliminated from the final data analyses. Also, those who scored less than 10% in the receptive section of the test and did no attempts at RCs in the production section were considered to lack developmental readiness for learning the target structures. They were also excluded from the data analyses. Moreover, the participants who did not attend all the treatment testing sessions were not included in data analyses. Finally, one hundred and thirteen learners participated in the study.

Instrumentation

Reading Texts. Eight short reading texts, each including instances of RCs were used in this study. The readability index of all texts, according to Smog Index, was sixth or seventh grade, i.e. easy to read or fairly easy to read. To ensure the participants comprehended the texts, they were required to take reading comprehension tests. The participants in all groups answered more than 90% of the comprehension items correctly.

Testing Materials. A language proficiency test and a test of RCs were used in the study. The Cambridge Standard Key English Test (KET) was used to determine the participants' English proficiency level. KET was considered as an appropriate proficiency test for the participants of this study based on their performance on a range of previous classroom tests of their course books. In addition, the students who acquired higher than 50 (N = 24) and lower than 20 (N = 13) out of 60 on the KET proficiency test were excluded from the study.

To evaluate the participants' knowledge of the targeted structures, the researcher developed a test of English RCs, which served as the pretest as well as the posttest in this study. Two more frequently used tasks in the studies on RCs (e.g., Doughty, 1991; Gass & Mackey, 2007; Izumi, 2002) were included in the test: the grammaticality judgement (GJ) task to evaluate the participants' receptive knowledge and the sentence combination (SC) task to evaluate their productive knowledge of RCs. To ensure the content validity of the test, care was taken to include appropriate number and type of RCs in the test, considering the number and type of RCs used in the reading texts. The reading texts included five types of RCs, classified according to the head noun they modify: Subject type, Direct Object type, Indirect Object type, Object of Preposition type, and Possessive type. Accordingly, the test included these five types of RCs. Also, the same number of each type of RCs were included in the test. The SC task included 15 items, each type of RC represented by three items. The GJ task included 20 items, each type of RC

represented by four items. For each type of RC, one GJ item included the correct form of the relevant RC, and the other three included erroneous RCs.

In addition, four experts specializing in EFL and having over five years' teaching experience at university evaluated the test and approved the content of the test in terms of difficulty level of the items, clarity in wording, use of Standard English and clarity of instruction. Consequently, the test was administered to a group of 8 English majors who were representative of the target population, and the items that included unfamiliar words or expressions as well as those that the learners had problem comprehending were either eliminated or revised. The final test was piloted to another group of 19 freshmen majoring in English language and literature. The internal consistency of each section of the test was calculated separately, using Cronbach's alpha. The GJ test enjoyed a reliability of .79, and the SC test enjoyed a reliability of .87.

In each SC item, the participants were given two sentences which they were required to combine by attaching the second sentence to the first. The results of the piloted test indicated that some learners used such words as *and*, *or*, and *because* to combine the sentences; therefore, a more guided format of SC applied in Doughty (1991) was used:

The boy is leaving the school. The boy broke the window last week.

The boy ----- last week is leaving the school.

Each GJ item was a statement including an RC. The participants were required to indicate if the statements were grammatical or ungrammatical. Also, they were required to mark the erroneous parts of the ungrammatical sentences and correct them. Four types of possible errors that RCs may contain were included in the test: nonadjacency of head noun and relative pronoun, incorrect retention of pronoun, using incorrect morphology for relative pronoun, and inappropriate omission of relative pronoun (Doughty, 1991).

Measures of Noticing. The present study used online measures of noticing, namely note-taking (Cho, 2010; Izumi, 2002; Izumi et al. 1999; Izumi & Bigelow, 2000; Song, 2007) and think-aloud protocols (Alanen, 1995; Bowles, 2010; Leow, 1997, 2001; Rosa & O'Neill, 1999). An advantage of online measures is that there is no time period between exposing to L2 input and the reporting; thus, the likelihood of memory decay is reduced and the validity of the data is increased (Gass & Mackey, 2007). The participants were required to take notes when they read the text. Note-taking was used on the grounds that it was compatible with the reading activity and it was considered not to interfere with the activity (Izumi, 2002).

Also, the participants' noticing was measured through think-aloud processes in that the participants self-reported orally what they were thinking about while performing the reading task. Think aloud protocols were considered to make use of the participants' short-term memory and to reach to the data that the participants had already paid attention to (Hama, 2012). Nine participants in each group were engaged in thinking aloud their thought processes. Based on the proficiency test scores, three participants were selected from among the low proficient ones, three participants from the mid proficient ones, and three participants from the high proficient ones.

Furthermore, noticing or absence of noticing was determined based on the participants' attempts at the target structures in the reconstruction tasks. That is, any type of RC attempted and the correct use of the targeted RC in the reconstruction task were considered instances of noticing the RCs.

Text Reconstruction Cloze Task. A text reconstruction task was used as the output task in the present study. A version of text reconstruction, i.e. text reconstruction cloze task, was employed. The reason underlying this decision was the findings of the pilot study, in which most of the participants tended to use structures other than the RCs in free reconstruction of the text; accordingly, it was decided to use a more controlled form of text reconstruction, i.e. text reconstruction cloze task (Nassaji & Fotos, 2014), in order to provide an optimal condition for producing RCs. Reconstruction cloze tasks require learners' ability to understand the context in order to supply the missing words in the text while potentially drawing their attention to the target structures.

Procedure

Before the treatment, the L2 proficiency test and the RC test were administered to all the participants. For RC test, first all the participants took the GJ task in 15 minutes. Upon completion of the GJ, the participants carried out the SC task in 12 minutes. The treatment started one week after the pretest. The treatment for each group took place through 8 sessions, over a 3-week period. In each session, first the participants in all groups read the same reading text. The participants in the +LOP groups took notes on a separate sheet any word they considered important or helpful to reconstruct the text. To prevent the possibility of direct copying, time of exposure was also controlled. To induce their noticing of the targeted structures, the researcher told the participants that they could use their notes during text reconstruction and that the accuracy of sentences in the reconstruction was as important as the content. The participants in the -LOP groups took notes on a separate sheet any word that they considered important to comprehend the text.

After reading the text, the participants in the -LOP groups answered comprehension questions, but the participants in the +LOP groups completed the task of text reconstruction, which aimed to examine the impact of output production in drawing learners' attention to RCs by giving the participants the opportunity for producing the target structures. It was expected that the participants in the +LOP groups would notice the RCs more than the participants in the -LOP groups.

In the second stage of the treatment, the participants read the same text again and took notes as in the first phase. However, in the second phase, the +TIE groups read the text containing enhanced RCs, while the -TIE groups read the same text in which the RCs were left unenhanced. Bolding and capitalizing were used as the techniques of enhancement in the present study in that all words in the RCs were bolded, and all the relative pronouns were also capitalized. Consequently, the participants engaged in the postexposure tasks as in the first phase.

After the second postexposure task, nine participants in each group took part in think-aloud processes. The participants in the +LOP groups compared their reconstructed text with the reading text, located the mismatches, and verbalized their thoughts. If they referred to RCs or parts of RCs as mismatches, they were required to explain the mismatches in order to establish what they were exactly attending to. In the -LOP groups, the participants were asked to read the text once more and think-aloud any parts they considered important to understand the text. When they referred to RCs or parts of RCs as important, they were asked why they considered these parts important in order to establish what they were exactly attending to. The verbal protocols were audio-taped for transcription and identifying instances of noticing RCs. One week after receiving the last session of the treatment, all the participants took the posttest.

Design and Analyses

The present study used both quantitative and qualitative approaches. A pretest-posttest design was followed in the quantitative part of the study. It was quasi-experimental and involved three treatment groups and a control group. The groups varied based on output requirement and exposure to TIE: +TIE+LOP group (N = 29), -TIE +LOP group (N = 28), +TIE -LOP group (N = 28), -TIE -LOP group (N = 28).

The qualitative part of the study used focus groups method to further investigate the effectiveness of the two pedagogical interventions, TIE and LOP, in isolation and in combination. More specifically, nine participants in each group were required to think aloud their thought processes in order to explore ‘what’ of noticing.

Noticing of the target structures was measured by computing the reconstruction scores and the note scores. The reconstruction scores were arrived at by tallying any type of RC attempted and the correct use of the target RC. Following Cho (2010), Izumi (2002), and Song (2007), the note scores of each participant were computed through dividing the total number of words he/she noted by the number of the target structure-related words in his/her notetaking. Then, a percentage score was calculated in order to minimize variation in the amount of note individuals took.

To compute the test scores, the correct answers were given one point and the incorrect answers were given zero. For each item in the SC part, only when the targeted RC was produced and everything related to the formation of RC was correct, the production was considered correct while errors of spelling and tense were not considered if they were not related to RC formation. Also, relative pronoun omission where it was acceptable was considered correct. For the GJ test, the correct response to each item was given one point. The GJ items received no point when they were judged incorrectly, or when the item was judged correctly, but the erroneous part of the statement was not underlined or corrected.

Results

Probing the First Research Question

As noticing was measured through text reconstruction as well as notetaking for the output groups, -TIE+LOP and +TIE+LOP, the results of the effects of the pedagogical interventions on noticing RCs are reported in two sections below.

Results of the Note Scores. To examine the first research question, a non-parametric analysis of covariance (ANCOVA) was used because, as Table 1 displays, the normality assumption was not retained. Non-parametric ANCOVA was run for comparing the four groups’, -TIE-LOP, -TIE+LOP, +TIE-LOP and +TIE+LOP, median scores on the posttreatment note taking of RCs while controlling for possible effect of their initial note taking before treatments.

Table 1

Descriptive Statistics; Testing Normality of Pretreatment and Posttreatment Note Taking of RCs by Groups

Group		N		Skewness		Kurtosis		
		Statistic	Value	Std. Error	Ratio	Value	Std. Error	Ratio
-TIE-LOP	Pretreatment	28	1.618	.441	3.67	4.357	.858	5.08
	Posttreatment	28	1.791	.441	4.06	5.131	.858	5.98
-TIE+LOP	Pretreatment	28	1.233	.441	2.80	1.497	.858	1.74
	Posttreatment	28	1.041	.441	2.36	.618	.858	0.72
+TIE-LOP	Pretreatment	28	.649	.441	1.47	.126	.858	0.15
	Posttreatment	28	.666	.441	1.51	1.802	.858	2.10
+TIE+LOP	Pretreatment	29	.799	.434	1.84	-.226	.845	-0.27
	Posttreatment	29	.031	.434	0.07	-.773	.845	-0.91

Table 2 demonstrates the mean ranks and median scores of the four groups on the posttreatment note taking of RCs. The results indicated the highest mean rank for -TIE+LOP (MR = 81.66) on the posttreatment note taking, followed by the +TIE+LOP (MR = 67.86), +TIE-LOP (MR = 57.55) and -TIE-LOP (MR = 20.54).

Table 2

Mean Ranks AND Median Scores; Posttreatment Note Taking of RCs by Groups

	Group	N	Mean Rank	Median
Posttreatment Note Taking	-TIE-LOP	28	20.54	13.50
	-TIE+LOP	28	81.66	55.00
	+TIE-LOP	28	57.55	42.00
	+TIE+LOP	29	67.86	50.00
	Total	113		

The results of non-parametric ANCOVA ($F [3, 109] = 40.99, p = .000$), Table 3, showed significant differences between the four groups' mean ranks on posttreatment note taking of RCs after controlling for the possible effects of pretreatment note taking. Therefore, the results indicated that the pedagogical interventions TIE, LOP, and TIE+LOP had statistically significant effects on the learners' noticing of RCs.

Table 3

Quade Nonparametric Analysis of Covariance; Posttreatment Note Taking of RCs by Groups with Pretreatment note taking

F	DFH	DFE	P Value
40.994	3	109	.000

Results of the Reconstruction Scores. To investigate the effects of the pedagogical interventions on the participants' noticing of RCs in the +LOP groups, the text reconstruction task was also considered a measure of noticing. Because of the nominal nature of the reconstruction scores, an analysis of chi-square (crosstabs) was used to compare the -TIE+LOP and +TIE+LOP groups' noticing of RCs in the first and second text reconstruction tasks. As Table 4 displays, the -TIE+LOP and +TIE+LOP groups had almost the same percentages of noticing RCs in the first text reconstruction (38 % vs. 37.7%). They also had almost the same percentages of noticing RCs in the second text reconstruction (62 % vs. 62.3%). The standardized

residual values for first and second text reconstructions were all lower than +/- 1.96; indicating that there were not any significant differences between the two groups on the first and second reconstruction scores.

Table 4

Frequencies, Percentages and Std. Residuals; Text Reconstruction by Group

		Reconstruction		Total	
		1 st	2 nd		
Group	-TIE+LOP	Count	629	1028	1657
		% within Group	38.0%	62.0%	100.0%
		Standardized Residual	.1	-.1	
	+TIE+LOP	Count	628	1038	1666
		% within Group	37.7%	62.3%	100.0%
		Standardized Residual	-.1	.1	
Total	Count	1257	2066	3323	
	% within Group	37.8%	62.2%	100.0%	

Table 5 indicates the findings of analysis of chi-square. The results ($\chi^2 [1] = .015$, $p = .903$, Cramer's $V = .003$, $p = .875$) indicated there were not any significant differences between the two groups' first and second text reconstruction tasks. Thus, the pedagogical intervention TIE did not have any statistically significant effect on the learners' noticing of RCs.

Table 5

Chi-Square Tests; Text Reconstruction by Group

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.025 ^a	1	.875		
Continuity Correction ^b	.015	1	.903		
Likelihood Ratio	.025	1	.875		
Fisher's Exact Test				.886	.452
Linear-by-Linear Association	.025	1	.875		
N of Valid Cases	3323				
Cramer's V	.003				.785

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 626.80.

b. Computed only for a 2x2 table

Probing the Second Research Question

To investigate the second research question, an analysis of covariance was used for comparing the four groups' means on the posttest of RCs. The parametric one-way ANCOVA was run because, as Table 6 demonstrates, the assumption of normality, linearity and homogeneity of regression slopes were retained.

Table 6*Testing Normality of Test of RCs (GJ+SC) by Groups with Pretest*

Group		N		Skewness		Kurtosis		
		Statistic	Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio
-TIE-LOP	Pretest	28	.419	.441	0.95	-.854	.858	-1.00
	Posttest	28	.547	.441	1.24	-.916	.858	-1.07
-TIE+LOP	Pretest	28	.209	.441	0.47	-.821	.858	-0.96
	Posttest	28	.149	.441	0.34	-1.283	.858	-1.50
+TIE-LOP	Pretest	28	.304	.441	0.69	-.826	.858	-0.96
	Posttest	28	.315	.441	0.71	-.705	.858	-0.82
+TIE+LOP	Pretest	29	.270	.434	0.62	-.519	.845	-0.61
	Posttest	29	.272	.434	0.63	-1.286	.845	-1.52

Table 7 indicates the descriptive statistics for the four groups on the posttest of RCs after controlling for the effect of the pretest. The findings showed the highest mean scores for the +TIE+LOP group (M = 18.88) on the posttest of RCs, followed by the -TIE+LOP (M = 18.06), the -TIE-LOP (M = 14.97) and the +TIE-LOP (M = 14.15) groups.

Table 7*Descriptive Statistics; Posttest of RCs by Groups with Pretest*

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
-TIE-LOP	14.974 ^a	.444	14.095	15.853
-TIE+LOP	18.060 ^a	.444	17.181	18.939
+TIE-LOP	14.154 ^a	.444	13.275	15.034
+TIE+LOP	18.887 ^a	.436	18.023	19.751

a. Covariates appearing in the model are evaluated at the following values: Pretest = 14.48.

The findings of one-way ANCOVA ($F [3, 108] = 27.32, p = .000$, partial eta squared = .431), Table 8, indicates significant differences between the four groups' means on the posttest. Therefore, the results indicated that the pedagogical interventions TIE, LOP, and TIE+LOP had statistically significant effect on the learners' learning of RCs.

Table 8*Tests of Between-Subjects Effects; Posttest of RCs by Groups with Pretest*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pretest	6837.050	1	6837.050	1241.268	.000	.920
Group	451.504	3	150.501	27.324	.000	.431
Error	594.877	108	5.508			
Total	38651.000	113				

The results of post-hoc comparison tests (Table 9) showed that:

A: There was no significant difference between the -TIE-LOP (MR = 14.97) and the +TIE-LOP (MR = 14.15) groups' means on the posttest of RCs (Mean Difference = .820, $p = .194$).

B: The -TIE+LOP group (MR = 18.08) significantly outperformed the -TIE-LOP (MR = 14.97) group on the posttest of RCs (Mean Difference = 3.08, $p = .000$).

C: The -TIE+LOP group (MR = 18.08) significantly outperformed the

+TIE-LOP (MR = 14.15) group on the posttest of IRCs (Mean Difference = 3.90, $p = .000$).

Table 9

Pairwise Comparisons; Posttest of RCs by Groups with Pretest

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
-TIE-LOP	+TIE-LOP	.820	.627	.194	-.424	2.063
-TIE+LOP	-TIE-LOP	3.086*	.627	.000	1.843	4.329
	+TIE-LOP	3.906*	.628	.000	2.661	5.150
+TIE+LOP	-TIE-LOP	3.913*	.622	.000	2.680	5.146
	-TIE+LOP	.827	.622	.186	-.405	2.060
	+TIE-LOP	4.733*	.623	.000	3.499	5.967

*. The mean difference is significant at the .05 level.

D: The +TIE+LOP group (MR = 18.88) significantly outperformed the -TIE-LOP (MR = 14.97) group on the posttest of RCs (Mean Difference = 3.91, $p = .000$).

E: There was not any significant difference between the +TIE+LOP (MR = 18.88) and the -TIE+LOP (MR = 18.08) groups' means on the posttest of RCs (Mean Difference = .827, $p = .186$).

F: The +TIE+LOP group (MR = 18.88) significantly outperformed the +TIE-LOP (MR = 14.15) group on the posttest of RCs (Mean Difference = 4.73, $p = .000$).

Probing the Third and Fourth Research Question

To answer the third and fourth research questions, all participants' the think-aloud protocols were transcribed. Two raters coded the think-aloud protocols as a) understanding b) noticing, or c) no report. The interrater reliability was 96%. Three themes emerged from the analysis of think aloud protocols under no report of RCs category: 1) noticing of grammatical points other than RCs, 2) noticing of content words, 3) noticing of unfamiliar expressions and unknown words.

The proportions of features noticed by the participants in all groups are shown in Table 10. The largest proportion of noticing has to do with the content of the reading texts, and the lowest proportion is related to understanding the RCs. Considering the third research question, the results indicated that the output-group participants mostly reported noticing of the RCs in the reading texts while comparing their production with the L2 input, with 44% of the noticing in the -TIE+LOP group and 61% of the noticing in the +TIE+LOP group relating to the RCs.

Regarding the fourth research question, the findings revealed the participants in the nonoutput groups largely reported noticing of the content of the reading texts while reading the L2 text for comprehension, with 40% of the noticing in the -TIE-LOP group and 46% of the noticing in the +TIE-LOP group relating to the content of the reading texts.

Table 10*Percentage of Linguistic Features Reported by Groups*

Groups	Understanding	Noticing	General Grammar	Content	Unknown words or expressions
-TIE-LOP	.9	.4	.25	.40	.22
+TIE-LOP	.4	.25	.19	.46	.5
+TIE+LOP	.2	.61	.3	.28	.6
-TIE+LOP	.7	.44	.11	.31	.7
Total	.6	.33	.15	.36	.10

A sample of verbal report including instances of noticing RCs by a participant in the +TIE+LOP group while comparing her output task with the reading input to locate mismatches is given in (1):

(1) *here I didn't write the part with 'whom' correctly.... I couldn't write these correctly, parts with 'whom'.... I have problem with who, whom and these, I get confused.*

Also, a sample of verbal report from the -TIE+LOP group and a sample of verbal report from the -TIE-LOP including instances of understanding RCs is given in (2) and (3), respectively:

(2) *In 'shopkeepers who cannot afford', 'who' is used for 'shopkeepers', we use relative pronoun 'who' for human beings, I wrote it correctly.*

(3) *Here 'people whose', 'whose' is used after people because 'whose' shows possession.*

The analysis of verbal reports that included instances of noticing the grammar issues other than RCs revealed that most of the participants focused primarily on such structures as passive verbs, infinitive phrases, prepositions, gerund phrases, verb phrases including modal verbs, and third-singular 's'. Samples of noticing each of these linguistic features are illustrated in (4-9), respectively:

(4) *here, the structure is passive, 'blood pressure is recorded' is passive, the verb is past participle....*

(5) *'encourage to buy things' is important. After 'encourage', infinitive is used, 'encourage' is important here....*

(6) *'disagree about' is important, its preposition is 'about', after 'disagree' we should use 'about'*

(7) *here, there is gerund, 'of both spending', 'spending' is gerund, I think it is because of 'of', after preposition 'of' gerund was used....*

(8) *after 'can' the verb is simple, 'can' is modal [verb]. Again here, we have 'may', it is modal [verb], and we have simple verb after it....*

(9) *this verb has 's' because it is singular, 'social networking' is singular, so the verb comes with 's'....*

The verbal reports were classified as 'noticing the content' when the participants referred to the words or expressions that bore the meaning of the input text. Samples of noticing the content are given in (10-12):

(10) *it is important that the people lose their control in spending money...that we can see the videos online....*

(11) *the key points in the text are repeated, they are important.... These sentences have key role in the meaning [of the text]*

(12) *that he could go to the beach...he couldn't do any fun, it is important.... That he was alone, it is important....*

Finally, samples of the verbal reports illustrating noticing unknown words are given in (13-14):

(13) *'crawl' and 'resign' I didn't know their meaning, they are important.*

(14) *here, 'afford' I'm not sure about the meaning, it means pay or something like that, I don't know the meaning.*

Discussion

The Effects of the Pedagogical Interventions on Noticing RCs

The first question explored the effects of three attention-drawing pedagogical interventions, TIE, LOP, TIE+LOP, on noticing the English RCs. The findings indicated significant differences among the experimental groups and the control group on noticing RCs after treatments; thus, the efficacy of all pedagogical interventions in promoting noticing of RCs.

The Effect of LOP on Noticing. The positive impact of output indicated in this study is line with the studies that supported the noticing function of output (e.g., Qi & Lapkin, 2001; Izumi, 2002). However, in Izumi's (2002) study, the positive effect of output was found only in the text reconstruction but not in the note-score analyses. Yet, in the present study, both the note-score analyses and the reconstruction-score analyses revealed the beneficial effect of LOP on noticing. Nevertheless, the results of this study are different from studies which did not confirm the effect of output in inducing noticing of the targeted forms (e.g., Izumi & Bigelow, 2000).

The positive impact of output on noticing in this study might be accounted by the type of output task employed in this study. The text reconstruction cloze task used in this study might have been more successful in inducing learners' noticing of the targeted structures than the output tasks used in the studies that failed to find such an effect. Another point that can be accounted for the efficacy of output in the present study regards employing input-output-input technique in that after carrying out the output task, participants were provided with the input text including instances of the target structures. Receiving L2 input *immediately* after output production might further push the participants to focus their attention to the problematic parts in the input, thus maximizing the possibility of noticing the forms in the input (Swain, 1995).

The Effect of TIE on Noticing. The findings also demonstrated a beneficial effect for TIE on noticing the target structures, which are in line with the studies revealing such an effect (e.g., Alanen, 1995; Izumi, 2002; Winke, 2013). The results lend further empirical support to the theoretical rational underpinning input enhancement proposed by Sharwood Smith (1991), positing that enhancing the linguistic features of input, as a way of improving the quality of input, increases the perceptual saliency of the targeted forms and in this way contributes to the increased noticing of the forms.

However, the findings contradict the studies that failed to find a favorable effect of TIE on noticing (e.g., Leow, 1997, 2001; White, 1998). Some factors can be accounted for the positive effect of TIE found in this study in contrast to the studies that were not successful to find such an effect. The first factor regards learner readiness. The participants in this study might have been cognitively and linguistically ready to recognize the target structures enhanced in the reading texts. As Philp (2003) argues, learners might not notice the input which is beyond their current level of L2 development. Philp also refers to learner readiness as the

learner's prior knowledge of and familiarity with linguistic items. The target structures in the present study had been previously introduced to the participants, which is in contrast to previous studies that found no effect of TIE, in which the targeted forms were almost new to the learners (Leow et al., 2003).

Second, the structures targeted in the study carry considerable communicative value. All forms are not equally amenable to TIE techniques; rather, the efficacy of attention-drawing activities to some extent depends on the structure involved (Han et al., 2008). This is evidenced by the studies which indicated that TIE was not effective to draw learners' attention to the targeted forms with low communicative value (Alanen, 1995; Leow et al., 2003; White, 1998), but it was effective in inducing learners' noticing of the targeted forms carrying substantive communicative value (e.g. Izumi 2002; Winke, 2013).

The third factor that may account the positive effect of TIE regards the technique of TIE used in this study, i.e. bolding and capitalizing. Capitalizing was found to be the most effective TIE technique by Simard (2009). Also, the participants might have been accustomed to bolding technique. As argued by Sarkhosh et al. (2013), Iranian learners typically use bolding as a learning strategy – they usually highlight important parts of their textbooks in order to emphasize those points and to pay more attention to the points in subsequent exposures. The bolding technique resembles highlighting more than other TIE techniques.

Finally, the length of exposure to the target structures can be accounted for the positive effect that TIE had on the participations' noticing. While in a number of former studies, learners were exposed to the enhanced forms for a relatively short time, a single exposure in some studies, in this study, the participants were exposed to the RCs for eight sessions.

Comparing the Effects of TIE and LOP on Noticing. The results indicated that LOP was more effective than TIE in inducing noticing. This is evidenced by the -TIE+LOP group having the highest rank of noticing RCs, as well as the +LOP groups' outperformance on noticing RCs compared with the +TIE only group. Thus, +LOP was found to facilitate greater noticing of the target structures, which is in line with Song (2007) but contradicts Izumi's (2002) findings indicating TIE as a more effective attention-drawing technique than output production.

The first explanation regards the noticing role of output in that the +LOP groups might have experienced some difficulties producing the target structures while performing the first output tasks and they tried to focus more on the target structures in the second exposures to the input texts. However, the +TIE only group did not experience such a heightened need to attend to the target structures after carrying out the task which focused solely on meaning, as Izumi (2002) also acknowledges. This finding suggests that input-output-input technique is more successful than input-only technique in inducing learners' noticing of the target forms.

Another explanation could relate to the difference in the follow-up tasks the participants in each treatment group were required to carry out, which Song (2007) refers to as well. While the +LOP groups were required to reconstruct the texts after the reading activity—input-output-input-output—the +TIE only group read the texts for the sole purpose of comprehension. Since the +LOP groups were required to produce the text, they might have felt greater need to attend to the formal aspects in addition to the meaning as they were told that accuracy in the output tasks was as important as the content. However, for the +TIE only group, who were only required

to carry out the comprehension task, the need to pay attention to the form might have less brought into focus.

The Effects of the Pedagogical Interventions on Learning RCs

The results indicated positive effects of LOP on learning RCs. The +LOP groups indicated a greater intake of RCs compared with the control group. The findings support the results of the studies which found such an effect (e.g., Qi & Lapkin, 2001; Swain & Lapkin, 1995) but in contrast to the studies that failed to indicate positive effect of LOP on learning target forms (e.g., Izumi & Bigelow, 2000).

However, the results did not indicate a beneficial effect of TIE on learning. +TIE only group did not significantly outperform the control group on the posttest of RCs, nor did the +TIE+LOP group significantly outperform the -TIE+LOP group on the posttest. The findings support the studies that failed to find a beneficial effect of TIE on learning (e.g., Leow, 1997, 2001) but contradict the studies that found a positive effect (e.g., Lee, 2007; Simard, 2009).

The findings were different for the two pedagogical interventions regarding intake of RCs. The findings are similar to those of Song (2007), in which the output groups indicated significantly greater intake of the targeted form than the nonoutput groups. Also, the findings are in line with Izumi (2002) who found that output production significantly facilitated learning of the target structures while TIE merely triggered noticing of the targeted structures but did not result in the subsequent cognitive processing needed for learning the structures.

The results of the study regarding the +LOP groups supported the Noticing Hypothesis positing that increased noticing of the form results in increased chance of learning the form (Schmidt, 2001). The +LOP groups, which indicated increased noticing of RCs after treatment, also improved on their performance on the posttest of RCs. Yet, the results on TIE contradicts what was expected based on the Noticing Hypothesis. The +TIE only group, which demonstrated significant increase on noticing RCs after treatment, did not significantly improve on their performance on the posttest of RCs.

One explanation might be the quality of noticing evidenced by the +TIE only group as referred to by Izumi (2002) in that the participants might have not noticed the structures at the level that would lead to deeper processing of the form needed for learning. The quality of attention triggered by LOP and TIE might be different probably because the former induces attention internally, while the latter triggers attention externally; thus, these two interventions “do not promote learning with an equal level of efficacy” (Izumi, 2002, p. 567). The results of the study lend support to the claim that output production engage learners in a deeper processing of form needed for learning than TIE (Izumi, 2002; Song, 2007).

The findings of the study should be interpreted considering a number of limitations. Interpreting the results of this study is restricted by some factors, including contextual factors and individual differences, that might potentially mediate the efficacy of TIE and LOP in promoting noticing of the target structures.

The Qualitative Analysis

The think-aloud protocols' analyses confirmed the findings of the quantitative data in this study, considering the positive impacts of LOP on the participants' noticing of the targeted structures. The +LOP-group participants

verbalized more instances of noticing the RCs than other linguistic forms. The results contradict those of Uggen (2012) in that the stimulated recall protocols in Uggen's study revealed that the vast majority of the noticing episodes did not include noticing of the target structures but other linguistic forms.

However, the beneficial effect of LOP found in the qualitative data analysis in this study is in line with Hanaoka (2007) and Qi and Lapkin (2001), in which the analyses of the think-aloud protocols supported the favorable impact of output on the participants' noticing of linguistic forms in un-planned writing tasks.

Also, the findings of the think-aloud protocols supported the findings of the quantitative data regarding the positive effect of TIE on the participants' noticing of the targeted structures. Although the participants in the +TIE-LOP group reported greater noticing of the content of the reading texts than noticing of the RCs, both +TIE groups were found to notice the RCs more than the -TIE-LOP group did. The results support Alanen (1995) and Jourdenais et al. (1995) in which think-aloud protocols' analyses indicated that TIE promoted noticing of the target forms. Yet, the results differ from Leow's (2001) showing that the enhanced input did not significantly promote noticing of the targeted forms compared to the unenhanced input.

In line with the studies which investigated the nature of noticing linguistic features by L2 learners (e.g., Amini, et al. 2019; Garcia Mayo & Labandibar, 2017; Hanaoka, 2007; Hanaoka & Izumi, 2012), the vast majority of the verbal reports in the -LOP groups in this study involved noticing of the content words and unfamiliar words or phrases.

In addition, the analysis of instances of noticing by the participants revealed that noticing of grammatical points other than RCs was more evident in the -LOP groups, especially in the -TIE-LOP group, probably because in other groups, the treatments, particularly LOP, directed learners' focused attention toward RCs and away from other linguistic forms.

The low proportion of reports on unknown words and unfamiliar expressions in this study can be accounted for by the readability level of the reading texts, which were easy and fairly easy to read; accordingly, they included more familiar words and expressions. Yet, the -TIE-LOP group's greater instances of noticing unfamiliar words can be related to their less focus on linguistic forms in an exclusively meaning-based program, compared to the other groups which were engaged in focus-on-form.

Conclusion

The focus of the study was exploring the impact of TIE and LOP on promoting learners' noticing and learning of English RCs. The findings of both quantitative and qualitative analyses provided evidence for the efficacy of TIE and LOP, in isolation and in combination, in inducing the participants' noticing of the target structures as well as the usefulness of LOP in promoting the participants' intake of the target structures.

As attention is increasingly viewed as the crucial cognitive process mediating input and intake in SLA, triggering learners' attention to linguistic forms can be helpful in developing their interlanguage. Noticing-inducing interventions have been empirically demonstrated to be effective in facilitating L2 learners' intake of linguistic forms in previous research. The particular contribution of the study to the existing body of literature is that it provides practitioners with more insight into

how to employ these pedagogical interventions.

This study incorporated measures of noticing in exploring the impact of TIE, which was disregarded in most of the previous TIE studies. As TIE was shown to be effective only in promoting noticing, but not acquisition, of the targeted structures in this study, it can be concluded that the failure of a number of previous studies to find a beneficial effect of TIE on learning L2 forms might not be due to inefficacy of TIE in inducing learners' noticing, but to inefficacy of TIE to help learners go beyond simple detection of forms and learn the target structures. In other words, TIE might not be a sufficient pedagogical intervention for promoting intake of a number of L2 forms, including RCs, as well as noticing thereof. Thus, teachers are recommended to employ TIE in combination with such other pedagogical interventions as explicit rule presentation or corrective feedback in order to facilitate a level of noticing which would lead to further processing needed for learning.

Another pedagogical implication regards the output task used in this study. The text reconstruction cloze task was shown to be successful in promoting both noticing and learning of the target structures in the present study. Accordingly, teachers and material developers are recommended to employ this rather new output task in L2 classrooms. While in free output production tasks, learners tend to focus dominantly on lexical features (Garcia Mayo & Labandibar, 2017), the findings of the present study, especially the think-aloud protocols, demonstrated that the text reconstruction cloze task, though not purely creative, was successful in providing an optimal condition for triggering the participants' noticing of RCs. Therefore, this version of dictogloss task is suggested to be used as an effective output task through which learners are more likely to use their linguistic resources of the forms in focus, thereby notice their possible deficiencies and develop their interlanguage.

Also, the findings of the think-aloud protocols provide practitioners with some clues on the nature of the linguistic forms more frequently noticed by the L2 learners whom the participants of this study are a sample of. Building on the findings of this study and the similar studies, teachers can design tasks that focus on the grammatical points learners themselves perceive as salient. In this way, they can more efficiently help learners develop their interlanguage, considering that teachers' planned pedagogical focus may not always match what learners actually attend to (Hanaoka, 2007). In other words, the nature of learner-initiated focus on form can guide teacher-initiated focus on form.

Finally, the positive impact of TIE+ LOP on noticing and learning of RCs found in this study adds one piece of evidence to the effectiveness of TIE in combination with LOP and provide practitioners with a variety of pedagogical interventions which could promote L2 learning.

A less investigated issue in the field of research on noticing is to what extent individual differences and contextual factors mediate attentional resources and the impact of noticing-inducing interventions. Further studies are invited to explore learners' motivation, learning style, pattern recognition ability, memory span as well as such structural features as the complexity and the communicative value of the targeted forms in relation to noticing.

Furthermore, future research could shed more light on the efficacy of the text reconstruction cloze task, targeting other linguistic forms and/ or comparing text reconstruction cloze task with other output tasks.

References

- Alanen, R. (1995). Input enhancement and rule representation in second language acquisition. In R. Schmidt (Ed.), *Attention and awareness in foreign language learning* (pp. 259-302). University of Hawaii Press.
- Amini, D., Amini, M., & Naseri Maleki, F. (2019). Investigating noticing in narrative writing tasks and its effect on EFL learners' writing performance. *Applied Research on English Language*, 8(3), 365-382.
<http://doi.org/10.22108/are.2019.115769.1437>
- Bowles, M. (2010). *The think-aloud controversy in second language research*. Routledge.
- Cho, M. Y. (2010). The effects of input enhancement and written recall on noticing and acquisition. *Innovation in Language Learning and Teaching*, 4(1), 71-87.
<http://doi.org/10.1080/17501220903388900>
- Doughty, C. (1991). Second language instruction does make a difference: Evidence from an empirical study of relativization. *Studies in Second Language Acquisition*, 13(2), 31-469.
<https://doi.org/10.1017/S0272263100010287>
- Ellis, R. (2008). *The study of second language acquisition*. Oxford University Press.
- Garcia Mayo, M. D. P., & Labandibar, U. L. (2017). The use of models as written corrective feedback in English as foreign language (EFL) writing. *Annual Review of Applied Linguistics*, 37, 110-127.
<https://doi.org/10.1017/S0267190517000071>
- Gass, S. M., & Mackey, A. (2007). *Data elicitation for second and foreign language research*. Erlbaum.
- Hama, M. (2012). *Strategic planning, recasts, noticing, and L2 development* [Unpublished doctoral dissertation]. Georgetown University.
- Han, Z., Park, E. S., & Combs, C. (2008). Textual enhancement of input. *Applied Linguistics*, 29(4), 597-618.
<https://doi.org/10.1093/applin/amn010>
- Hanaoka, O. (2007). Output, noticing, and learning: An investigation into the role of spontaneous attention to form in a four-stage writing task. *Language Teaching Research*, 11(4), 459-479.
<https://doi.org/10.1177/1362168807080963>
- Hanaoka, O., & Izumi, S. (2012). Noticing and uptake: Addressing pre-articulated covert problems in L2 writing. *Journal of Second Language Writing*, 21(4), 332-47.
<https://doi.org/10.1016/j.jslw.2012.09.008>
- Izumi, S. (2002). Output, input enhancement, and the noticing hypothesis: An experimental study on ESL Revitalization. *Studies in Second Language Acquisition*, 24(4), 541-577.
<https://doi.org/10.1017/S0272263102004023>
- Izumi, S., & Bigelow, M. (2000). Does output promote noticing in second language acquisition? *TESOL Quarterly*, 34(2), 239-278.
<https://doi.org/10.2307/3587952>
- Izumi, S., Bigelow, M., Fujiwara, F., & Fearnow, S. (1999). Testing the output hypothesis. *Studies in Second Language Acquisition*, 21(3), 421-452.
<https://doi.org/10.1017/S0272263199003034>
- Jourdenais, R., Ota, M., Stauffer, S., Boyson, B., & Doughty, C. (1995). Does textual enhancement promote noticing? A think-aloud protocol analysis. In R. Schmidt (Ed.), *Attention and awareness in foreign language learning* (pp. 183-216). University of Hawaii.
- LaBrozzi, R. M. (2014). The effects of textual enhancement type on L2 form recognition and reading comprehension in Spanish. *Language Teaching Research*, 20(1), 75-91.
<http://doi.org/10.1177/1362168814561903>
- Lee, S. K. (2007). Effects of textual enhancement and topic familiarity on Korean EFL student's reading comprehension and learning of passive voice. *Language*

- Learning*, 57(1), 87-118.
<https://doi.org/10.1111/j.1467-9922.2007.00400.x>
- Leow, R. P. (1997). Attention, awareness and foreign language behavior. *Language Learning*, 47(3), 467-505.
- Leow, R. P. (2001). Attention, awareness and foreign language behavior. *Language Learning*, 51(1), 13-155.
<https://doi.org/10.1111/j.1467-1770.2001.tb00016.x>
- Leow, R. P., Egi, T., Nuevo, A. M., & Tsai, Y. C. (2003). The roles of textual enhancement and type of linguistic item in adult L2 learners' comprehension and intake. *Applied Language Learning*, 13(2), 93-108.
- Loewen, S., & Inceoglu, S. (2016). The effectiveness of visual input enhancement on the noticing and L2 development of the Spanish past tense. *Studies in Second Language Learning and Teaching*, 6(1), 89-110.
<http://doi.org/10.14746/ssl.t.2016.6.1.5>
- Naseri, E., & Khodabandeh, F. (2019). Comparing the impact of audio-visual input enhancement on collocation learning in traditional and mobile learning contexts. *Applied Research on English Language*, 8(3), 383-422.
<http://doi.org/10.22108/are.2019.115716.1434>
- Nassaji, H., & Fotos, S. (2014). *Teaching grammar in second language classrooms: Integrating form-focused instruction in communicative context*. Routledge.
- Overstreet, M. H. (1998). Text enhancement and content familiarity: The focus of learner attention. *Spanish Applied Linguistics*, 2, 229-258.
- Philp, J. (2003). Constraints on noticing the gap. *Studies in Second Language Acquisition*, 25(1), 99-126.
<https://doi.org/10.1017/S0272263103000044>
- Qi, D. S., & Lapkin, S. (2001). Exploring the role of noticing in a three-stage second language writing task. *Journal of Second Language Writing*, 10(4), 277-303.
[https://doi.org/10.1016/S1060-3743\(01\)00046-7](https://doi.org/10.1016/S1060-3743(01)00046-7)
- Robinson, P. (1995). Attention, memory, and the noticing hypothesis. *Language Learning*, 45(2), 83-331.
<https://doi.org/10.1111/j.1467-1770.1995.tb00441.x>
- Rosa, E., & O'Neill, M. (1999). Explicitness, intake and the issue of awareness. *Studies in Second Language Acquisition*, 21(4), 511-556.
<https://doi.org/10.1017/S0272263199004015>
- Russell, V. (2014). A closer look at the output hypothesis: The effect of pushed output on noticing and inductive learning of the Spanish future tense. *Foreign Language Annals*, 47(1), 25-47.
<http://doi.org/10.1111/flan.12077>
- Sarkhosh, M., Taghipour, B., & Sarkhosh, H. (2013). Differential effect of different textual enhancement formats on intake. *Procedia-Social and Behavioral Sciences*, 70(2), 544-559.
<http://doi.org/10.1016/j.sbspro.2013.01.092>
- Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11(2), 129-158.
<https://doi.org/10.1093/applin/11.2.129>
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3-32). Cambridge University Press.
- Simard, D. (2009). Differential effects of textual enhancement formats on intake. *System*, 37(1), 124-135.
<https://doi.org/10.1016/j.system.2008.06.005>
- Simard, D., & Wong, W. (2001). Alertness, orientation and detection. *Studies in Second Language Acquisition*, 23(1), 103-124.
<https://doi.org/10.1017/S0272263101001048>
- Song, M. (2007). Getting learners' attention: Typographical input enhancement, output, and

- their combined effects. *English Teaching*, 62(2), 193-215.
<https://doi.org/10.15858/engtea.62.2.200706.193>
- Swain, M. (1985). Communicative competence: Some roles of comprehensible input and comprehensible output in its development. In S. M. Madden (Ed.), *Input in second language acquisition* (pp. 235-253). Newbury House.
- Swain, M. (1995). Three functions of output in second language learning. In B. Cook & B. Seidlhofer (Eds.), *Principles and practice in applied linguistics: Studies in honor of H. Widdowson* (pp. 125-144). Oxford University Press.
- Swain, M. (2005). The output hypothesis: Theory and research. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 471-484). Erlbaum.
- Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied Linguistics*, 16(3), 371-391.
<https://doi.org/10.1093/applin/16.3.371>
- Tomlin, R., & Villa, V. (1994). Attention in cognitive science and second language acquisition. *Studies in Second Language Acquisition*, 16(2), 183-204.
<https://doi.org/10.1017/S0272263100012870>
- Uggen, M. S. (2012). Reinvestigating the noticing function of output. *Language Learning*, 62(2), 506-540.
<https://doi.org/10.1111/j.1467-9922.2012.00693.x>
- VanPatten, B. (2004). Input processing in SLA. In B. VanPatten (Ed.), *Processing instruction: Theory, research, commentary* (pp. 5-32). Erlbaum.
- White, J. (1998). Getting the learner's attention. In C. J. Doughty & J. Williams (Eds.), *Focus on form in second language acquisition classroom* (pp. 85-113). Cambridge University Press.
- Winke, P. (2013). The effects of input enhancement on grammar learning and comprehension: A modified replication of Lee (2007) with eye-movement data. *Studies in Second Language Acquisition*, 35(2), 323-352.
<https://doi.org/10.1017/S0272263112000903>