The Impact of Input Flooding and Textual Enhancement on Iranian EFL Learners' Syntactic Development

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ABSTRACT

The present study was an attempt to examine the impact of input flooding (IF) and textual enhancement (TIE) on EFL learners' syntactic development. Four homogenous groups were selected based on the pre-test and placement tests. During the treatment, the first group (i.e., IF) received reading comprehension passages in which the structure was flooded. The second group (i.e., TIE) received reading comprehension passages in which the structure was textually enhanced. The third group (IF + TIE) received the reading comprehension passages with the structures enhanced through both input flood and textual enhancement. The fourth group received reading texts in which the structure was neither flooded nor textually enhanced. The results showed that textual enhancement and input flooding have positive effects on the recognition and production of syntactic development. These techniques resulted in higher acquisition scores in production and recognition when combined. The findings of the present study are further discussed with implications for teachers in second/foreign language teaching.

INTRODUCTION

The field of second language acquisition (SLA) has witnessed an expanding body of studies in the role of noticing in language learning. A few scholars have contended that attention to form is fundamental, or at least facilitative, for the acquisition of the target language, particularly if attention to form happens during a generally meaning oriented task (Leow, 1997, 1999, 2001; Robinson, 1995; Schmidt, 1990, 1993, 1994; Tomlin & Villa, 1994). In an attempt to attract learners' focus on formal structures of the language, diverse strategies have been employed, ranging from more explicit strategies, such as rule presentation, to more implicit procedures, such as input flood. This study is an investigation about the impacts of input enhancement, a sort

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of focus-on-form (Long, 1996) activity in which learners' attention is attracted to formal aspects of the language within a meaning-oriented task.

Input enhancement is characterized by Kim (2006) as pedagogical strategies intended to attract L2 learners' focus to formal elements in the L2 data. It is based on Sharwood Smith's (1991) recommendation that changing the nature of input can empower learners' processing of linguistic material. Schmidt's (2001) Noticing Hypothesis gives a theoretical reasoning for the utilization of input enhancement, the goal of which is to attract learners' attention to language structures through formatting procedures, such as bolding, italicizing or underlining. So far, most of the experiments on input enhancement have attended to syntactic learning (White, 1998; Izumi, 2002; Leow, Egi, Nuevo, & Tsai, 2003; Jahan & Kormos, 2015). In spite of the wide variety of studies, no definite conclusions on the adequacy of input enhancement can be drawn, predominantly because of significant methodological contrasts between studies (Han, Park & Combs, 2008).

INPUT FLOOD, TEXTUAL ENHANCEMENT AND L2 ACQUISITION

Language input normally alludes to the language information that learners are presented to. Despite the vital part of input in L2 development (e.g. Gass, 1997; Krashen, 1982; Loschky, 1994), scholars have noticed that not all input is used by learners for further processing. Also, they have demonstrated that attending to input is fundamental for L2 learning to take place, or possibly for complete mastery (Leow, 1997, 1999, 2001; Robinson, 1995; Schmidt, 1990, 1994, 2001; Tomlin & Villa, 1994). Accordingly, researchers have been concerned about how to attract learners' attention to certain components to prompt noticing and further learning of the target structure or rules.

Input enhancement or underscoring a specific part of the input by applying various strategies such as textual input enhancement (TIE) is one path in which learners' attention conceivably can be attracted to particular components in the input. Numerous studies have examined this potential and its consequences for L2 learning (e.g., Alanen, 1995; Doughty, 1991; Izumi, 2002; Jourdenais, Ota, Stauffer, Boyson, & Doughty, 1995; Lee, 2007; Leow, 2001; Leow et al., 2003; Song, 2007). These studies have yielded diverse results with respect to the viability of TIE on driving attention and helping learners acquire a specific structure. A few studies (Doughty, 1991; Jourdenais et al., 1995; Lee, 2007) uncovered beneficial outcomes of TIE on both noticing and learning, while others (Izumi, 2002; Song, 2007) demonstrated constrained impacts of TIE when contrasted with other attention drawing strategies such as output, and yet others indicated no effect on either noticing or learning (Alanen, 1995; Leow, 2001; Leow et al., 2003; White, 1998).

A few studies (Leow et al., 2003; Shook, 1999) have inspected the impacts of the target form as another variable in investigating TIE on noticing. For example, Leow et al. (2003) explored the impacts of TIE on a morphologically relative salient form of the Spanish present perfect (e.g., ha terminado ‘has finished’) and on a generally less salient morpheme, the Spanish present subjunctive (e.g., termine ‘should finish’). The examination of participants’ think-aloud and their performance on recognition and comprehension tasks demonstrated that learners can benefit more from TIE with a more salient structure than a less salient one. Moreover, the results uncovered that both the enhanced group and unenhanced group demonstrated more noticing of the more salient structure than of a less salient structure, recommending that the impacts of the

target structure can supersede those of TIE. Consequently, it is essential to explore the impacts of TIE with a mixture of structures, especially those with generally higher communicative worth. This likewise gives teachers information about whether to embrace TIE and which form to utilize with it.

Another type of instruction that can add to L2 structure acquisition is input flood which, as Han et al. (2008) clarify, builds the salience of a target language feature through artificially designed recurrence. The effectiveness of input flood is supported by an extensive body of studies demonstrating that reiteration is a vital factor in the process of achieving proficiency in an L2 (e.g., Ellis, 2002; VanPatten, Williams, & Rott, 2004). Research on single words exhibits that L2 learners need to experience unknown items a few times before any learning happens (Chen & Truscott, 2010; Pigada & Schmitt, 2006; Webb, 2007). For instance, Chen and Truscott (2010) developed a study in which Chinese-speaking learners of English read 13 texts (250–300 words each) where 10 unknown target words were displayed one, three or seven times. Following Webb's (2007) design, the researchers utilized a battery of seven tests taking advantage of diverse aspects of lexical knowledge and found that repetition had a beneficial influence on learners' outcomes at both a productive and receptive level. Hernández (2011) compared the effect of input flood and explicit instruction (IF + EI) with input flood alone (IF) on learners' acquisition of discourse markers. Although the IF + EI received communicative practice and feedback, the IF only group was not exposed to any practice and feedback. Results of the speaking task where learners were required to narrate a past event indicated the insignificant difference of the groups on participants' use of discourse markers. Szudarski and Carter (2014) investigated Polish learners' learning of verb-noun and adjective-noun collocation based on the use of two instructional strategies: input flood only and an integration of input flood and input enhancement. The results of receptive and productive tests showed that input flood combined with input enhancement can improve learners' L2 collocational knowledge.

As Han et al. (2008) pointed out, further research is needed to draw any solid conclusion concerning the roles that input flood and textual enhancement play in drawing learners' attention to form. Examining the effects of these techniques, separately or in combination, can provide us with valuable information on their effectiveness. The results of the present study may therefore shed more light on the issue. It aims at examining the effect of input flood and textual enhancement on the acquisition of syntactic structures in an Iranian context.

Research questions

The study aims to answer the following research questions:

1. What are the effects of textual enhancement on the recognition and production of target linguistic forms?
2. What are the effects of input flood on the recognition and production of target linguistic forms?
3. What are the effects of both textual enhancement and input flood on the recognition and production of the target linguistic forms?

METHOD

Participants

The present study was conducted with a sample of 113 Iranian lower-intermediate students of English. The participants included both male and female learners with the age range of 18-35 from language institutes in Kerman. Participants were divided into three experimental groups (input flood, textual enhancement, combination of both) and one control group.

Instruments and materials

Target Syntactic Structures

The present study attempts to address the role of input enhancement in relation to syntactic development in language learners. For this purpose, three adjective clauses and four verbs+ prepositions (i.e., "apply for", "apologize to", "laugh at", and "believe in") were studied as the target syntactic features. These adjective clauses start with the relative pronouns of *who, which,* and *where.* The reason for choosing these structures was that a grammar test was piloted and adjective clauses as well as these four verb+ preposition were found to be the most challenging for the EFL learners of the current study due to the difference in their first language. For instance, *believe* comes with the preposition “in” in English, whereas it is paired with the preposition “to” in Persian.

Reading Texts

In order to present the target structures to the learners, a series of reading comprehension texts that contained these features were prepared and used. The eight reading texts were selected from lower intermediate EFL books, which were about different topics such as computer, the Internet, commercial, etc. Each text was followed by a reading comprehension activity that required the learners to provide answers to multiple-choice questions. For the input flood group, the text was modified so that it included more exemplars (N = 5) of the target structures. For the textual enhancement group, the target structures (N = 7-10) in the original text were enhanced through bolding and italicizing. The third group received the same texts as the input flood group with all the target structures textually enhanced through bolding and italicizing. The control group received the same text as the textual enhancement group with none of the target features enhanced.

Oxford Placement Test

In order to establish the homogeneity of the participants’ proficiency level, the Oxford Placement Test (OPT) was used. It consists of 60 items of grammar. The test has been tested numerously for its reliability and fairly discriminates learners with varying levels of proficiency.

Recognition Test

In order to check the participants' prior familiarity with the target syntactic structures and measure any gains as a result of treatment, a 40-item multiple-choice test for checking recognition had been developed on the target structures. Prior to pretesting, the tests were piloted and the reliability ($\alpha = .78$) and item analyses were run. Two randomly ordered versions of the recognition tests were prepared, one for the pretest aimed at checking the prior familiarity and the other for the posttest aimed at measuring any possible gains. The time needed to complete the test was 30 minutes.

Production Test

In order to check the participants' prior familiarity with the target syntactic structures and measure any gains as a result of treatment, a 7-item translation test for checking production had been developed on the target structures. Participants were asked to translate sentences from Persian into English. Prior to pretesting, the tests were piloted and the inter-rater reliability of two raters' evaluation of the participants' writings was computed using Cohen's Kappa test. The resulting Kappa of .85 indicates that raters provided similar ratingsof students' writing performance. Like the recognition tests, two randomly ordered versions of the production test were prepared, one for the pretest aimed at checking the prior familiarity and the other for the posttest aimed at measuring any possible gains. The time needed to complete the test was 10 minutes.

Procedure

The present study consisted of three phases of pre-test, treatment, and post-test. During the pre-test phase, all the four groups received the same measurement instruments: Oxford Placement Test and 40-item multiple choice test for checking recognition as well as 7-item translation test for checking production. The results from OPT were used to establish the homogeneity of the participants. Participants with extreme scores (i.e., higher than one standard deviation above or below the mean) were removed from the final analysis (N = 11) and 113 participants were included in the final analysis. The results from the 40-item multiple-choice test as well as 7-item translation test were employed to control the prior familiarity with the target structures and to determine that groups were not significantly different at the outset of the study.

During the treatment phase, the participants went through a series of reading texts (N = 8) that included target syntactic structures and they had to answer comprehension questions that followed. The treatment lasted for 8 sessions, each session devoted to one of the reading texts. There were two sessions per week with each session lasting for one and half hour. Thus, the treatment lasted for a total of 4 weeks.

For the input flood group, the original texts selected for the study were modified in a way that they contained more instances of the target structures. Therefore, eight texts flooded with the structures under investigation were developed, each text for one session. The participants were given the text along with a reading activity to complete. For the textual enhancement group, the target structures in the original texts were textually enhanced through bolding and italicizing. Same with the input flood group, they were asked to read the passages and do the accompanying activity. The next group received the texts with the target structures enhanced through both input

flood and textual enhancement. Similarly, they were not informed about the enhanced forms, but were directed to read the passage and carry out the accompanying activity. The control group received reading texts in which the target syntactic forms were neither flooded nor textually enhanced. The same procedure as the other three groups was followed; that is, they read the texts and went through the reading activities.

After the last treatment session, the participants were given a 40-item multiple-choice test for checking recognition as well as the 7-item translation test for checking production. These tests were the same as the ones used in the pre-test, differing only in the order of the items. It needs to be mentioned that the treatment lasted for 4 weeks and it is assumed to be a long enough period to eliminate any practice effect resulting from the pre-test, also confirmed by previous research (Beglinger, Gaydos, Tangphao-Daniels, Duff, Karaken, Crawford, Fastenau, & Siemers, 2005).

Coding and Analysis

The recognition and production tests were scored in the same way in which a correct answer received a score of 1 and an incorrect answer a score of 0. Therefore, 47 points was the total score possible for both the production and recognition tests.

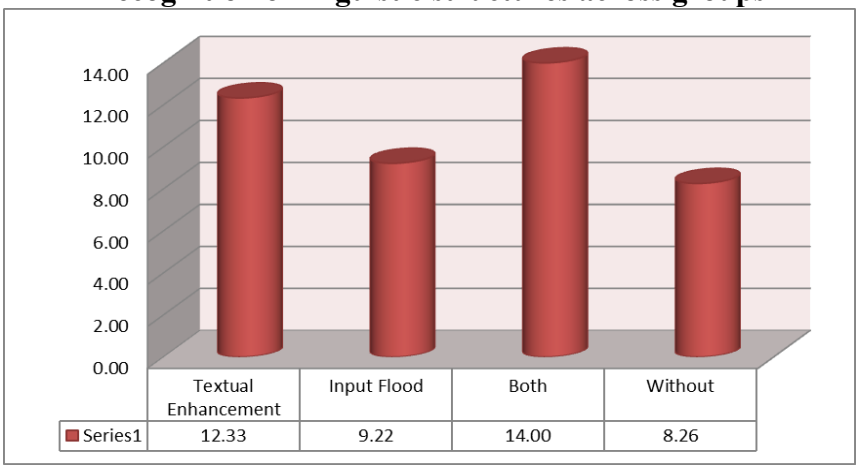
RESULTS

Table 1 displays the descriptive statistics for the four groups on the posttest of recognition. The means for the textual enhancement (TIE, M = 12.33), input flood (IF, M = 9.22), both(TIE+IF, M = 14.00) and neither (M = 8.26) on the posttest of recognition demonstrates the differences as could also be seen in Figure 1. It can be seen that the TIE+IF group and the TIE group had the highest performance compared to the other groups. However, in order to do accurate mean comparisons, a one-way ANOVA was performed, the results of which are reported in Table 2.

TABLE1
Descriptive Statistics Results of Recognition by Groups

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
Post-Recognition	Textual Enhancement (TIE)	30	12.33	2.42	.443	11.43	13.24
	Input Flood (IF)	27	9.22	1.67	.322	8.56	9.88
	Both (TIE+IF)	29	14.00	2.50	.466	13.05	14.95
	Without	27	8.26	2.03	.391	7.46	9.06
	Total	113	11.04	3.17	.299	10.45	11.64

FIGURE 1
Recognition of linguistic structures across groups



The results of the one-way ANOVA ($F(3, 109) = 41.56$, $p < .05$, $\omega^2 = .518$) indicated that there are statistically significant differences between the means of the four groups on the posttest of recognition. The results of the a priori (contrast) tests run to compare the treatment groups with the control group that received no treatment indicate that: the TIE group (M = 12.33) outperformed the no-treatment group (M = 8.26) on the posttest of recognition ($t(109) = 6.98$, $p < .05$). However, the IF group (M = 9.22) did not outperform the no-treatment group (M = 8.26) on the posttest of recognition ($t(109) = 1.61$, $p > .05$). Finally, the TIE+IF group (M = 14) outperformed the no-treatment group (M = 8.26) on the posttest of recognition ($t(109) = 9.76$, $p < .05$). The results for the differences among the experimental groups were further analyzed by means of a post-hoc Tukey test. The results indicated statistically significant differences between groups TIE and TIE+IF ($p < .05$) and groups IF and TIE+IF ($p < .05$). There was also a statistically significant difference between the TIE and IF groups ($p < .05$) with TIE outperforming IF participants. When compared to the control group, the TIE students performed better than the control group whereas IF students showed no difference.

TABLE2
One-Way ANOVA Results of Recognition by Groups

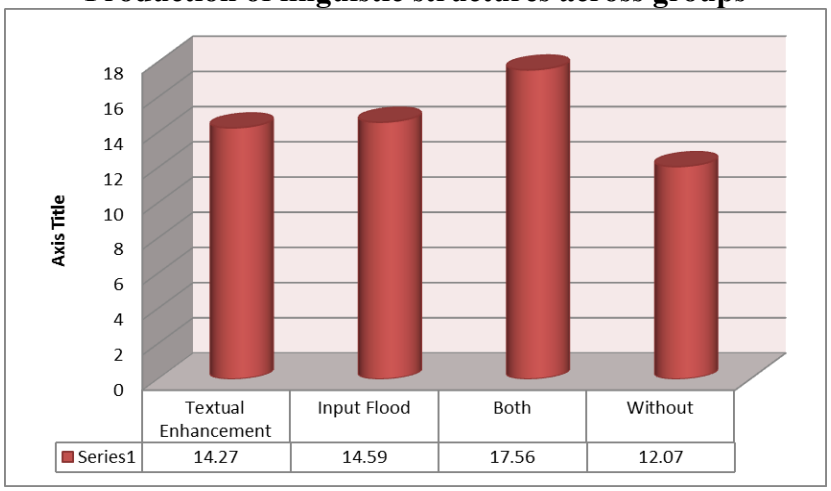
	Sum of Squares	*df*	Mean Square	F	Sig.
Between Groups	602.26	3	200.75	41.56	.000
Within Groups	526.51	109	4.83		
Total	1128.77	112			

Table 3 displays the descriptive statistics for the four groups on the posttest of production. The means for the textual enhancement (M = 14.27), input flood (M = 14.59), both (17.56) and neither (M = 12.07) on the posttest of production show that the highest mean score belongs to the TIE+IF group. Figure 2 shows the results across the groups which clearly demonstrate higher performance in the order of TIE+IF, IF, and TIE.

TABLE3
Descriptive Statistics Results of Production by Groups

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
Post-Recognition	Textual Enhancement (TIE)	30	14.27	4.28	.78	12.67	15.87
	Input Flood (IF)	27	14.59	4.24	.81	12.91	16.27
	Both (TIE+IF)	29	17.56	4.26	.79	15.94	19.19
	Without	27	12.07	3.58	.69	10.66	13.49
	Total	113	14.67	4.50	.42	13.83	15.51

FIGURE 2
Production of linguistic structures across groups



The results of ANOVA are reported in Table 4. The results of one-way ANOVA ($F(3, 109) = 8.47$, $p < .05$, $\omega^2 = .166$) indicate that there are significant differences between the means of the four groups on the posttest of production. The results of the Tukey post-hoc analysis shows that the TIE group (M = 14.27) outperformed the no-treatment group (M = 12.07) on the posttest of production ($t(109) = 2.01$, $p < .05$). The IF group (M = 14.59) also outperformed the no-treatment group (M = 12.07; $t(109) = 2.25$, $p < .05$). Finally, the TIE+IF group (M = 17.59) as well outperformed the no-treatment group (M = 12.07) on the posttest of production ($t(109) = 4.99$, $p < .05$). The results of the post-hoc Tukey examining experimental group differences revealed that the TIE+IF group learners performed better than both the TIE and IF groups ($p < .05$). There was however no statistically significant difference between the TIE and IF groups ($p > .05$). In sum, results indicate that all treatment groups performed better than the control with TE+IF learners showing better performance than the other two treatment groups.

Table 4
One-Way ANOVA Results of Production by Groups

	Sum of Squares	*df*	Mean Square	F	Sig.
Between Groups	429.92	3	143.31	8.47	.000
Within Groups	1843.88	109	16.91		
Total	2273.80	112			

DISCUSSION AND CONCLUSION

The present study was carried out to examine the effects of input enhancement methods on the linguistic recognition and production of seven target linguistic structures by Iranian EFL learners. It was found that different techniques of input enhancement (i.e., TIE, IF, and TIE + IF) have significant differential impact on the recognition and production of these syntactic structures. The results of this study are in line with those of Shook's (1994) findings on textual enhancement effect (i.e., enlarging and bolding) on the intake of relative pronouns and present perfect.

The results also indicated that input flood or textual enhancement groups performed better on the production test than the control group. However, this was not the case with the recognition test. Only the TIE group students performed better than the control group on the recognition test. Yet, when both input flood and textual enhancement methods were combined, it led to better performance in both the recognition and production tests. Despite the fact that past studies (Alanen, 1995; Doughty, 1991; Izumi, 2002; Jourdenais et al., 1995; Lee, 2007; Leow, 2001; Leow et al., 2003; Song, 2007; White, 1998) have yielded mixed results regarding the adequacy of TIE on noticing, this study supports the claim that TIE helps or prompts better learning of structures. Although this study supports the assumption that TIE can be viable in affecting learners' attention to form, and as a result can help learners acquire it, there are numerous studies that repudiate these discoveries and that have demonstrated no impacts for TIE on either noticing or learning (Alanen, 1995; Leow, 2001; Leow et al., 2003; White, 1998). Methodological contrasts, including the attributes of the target element, the quantity of examples of the target input, and former presentation of the structure, may justify these conflicting results.

Moreover, the results for the second research question of the present study are partly in line with Hernández's (2011) research which examined the effect of input flooding on the use of discourse markers to narrate a past event. In his study, learners were in two experimental groups: input flooding and combination of explicit instruction and input flooding. Results showed that the combination of explicit instruction and input flooding had more effect than input flooding alone on learners' improvements in discourse marking. Findings of the present study showed similar effects for IF and control group in the recognition tests, which might be because the incidental exposure to the items in the form of IF without any explicit guidance may have not been noticeable to make a difference. In contrast, since production might require some explicit knowledge from language learners to use, they could have converted the incidentally acquired target items to explicit knowledge while producing them. On the whole, the effectiveness of input flood on the production of linguistic elements partly support the findings of previous research (Farley, 2004; Reinders & Ellis, 2009; Rosa & O'Neill, 1999; Sanz & Morgan-Short, 2004; VanPatten & Oikkenon, 1996; Wong, 2004), showing that exposure to an input-rich envi-

ronment combined is adequate to promote SLA in general. These studies have not made a distinction between recognition and production but are supportive of IF in language learning.

The results of the post-hoc analysis also referred to the superiority of the mixed group in both the recognition and production tests in comparison to the textual enhancement and input flood groups. However, the textual enhancement and input flood groups were not significantly different from each other in the production test, showing that they were both effective. This result can be attributed to the same reason given above about the nature of learning and the test type. It is assumed that in production, more explicit knowledge is required and the production tests require learners to convert the input they were exposed to incidentally to the output that needs more explicit attention. Therefore, learners in all the treatment groups were better than the control group in language production, indicating the success of treatments in activating learners' attention when needed. This finding indicates if the target structures get both enhanced and seeded in terms of their frequency, their acquisition becomes improved since both methods help learners notice the target structures much better than any of them alone.

PEDAGOGICAL IMPLICATION AND LIMITATIONS

The study can have pedagogical implications for the practitioners. First and foremost, it demonstrates that input flood combined with input enhancement can enhance learners' L2 linguistic knowledge. This implies that not just Focus on Forms (FonFs) (e.g., Laufer & Girsai, 2008) but also implicit methods of Form Focused Instruction (FFI) that are less prominent (Doughty, 2003) ought to be considered by instructors and language professionals. Another implication of this study is that language teachers have no reason to neglect implicit instruction in favor of explicit instruction any more than they should neglect explicit teaching in favor of implicit teaching. On the basis of these results, teachers are advised to use both types depending on their goals of instruction.

With regard to the limitations of the study, it should be mentioned that a generally limited number of texts with low frequency of target items were included, resulting in the low generalizability of the results, and future research can be conducted with larger number of texts. In addition, the data were collected by only quantitative means, which can limit the interpretation of the findings. Future research can address this limitation by collecting data by means of other tools such as think-aloud protocols, observations and stimulated recall. In this way, the complex nature of structure learning and the implicit and explicit learning of such items would be better demonstrated.

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