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The Influence of Learning Styles and Input Modalities on the Simultaneous Attention to Form and Meaning

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Abstract

Second language acquisition (SLA) research suggests that learners differ in the extent to which they can direct their attention to the meaning and form of the input. Among the various factors responsible for this discrepancy, learning style by itself or along with other factors might influence the process, yet its impact has rarely been addressed in empirical studies. The present study aimed to investigate how learners with different learning styles allocate their attention to form and content when exposed to different input modalities. For this purpose, 73 male and female university students from three intact groups participated in the research. First, the Ehrman & Leaver (E & L) Construct Questionnaire was implemented to determine the participants' learning styles. Then, the reconstructive Elicited Imitation (REI) Tests comprising a reading and a listening section were administered to specify how learning styles might allocate their attention if exposed to different modalities. Moreover, to obtain further evidence regarding how they would attend to the form and content, a structured interview was employed. The analysis of Chi-square showed that the atomistic learners processed the linguistic features more effectively while the holistic learners focused more on the content. The results further indicated that both types of learners had difficulty processing oral input, although the atomistic learners outperformed the holistic learners in attending to the formal features. Finally, it was revealed that learning style is a crucial factor, directing the EFL learners how to divide their attention between form and meaning, but input modalities can only influence the process.

Keywords: Atomistic learners, Attention, Holistic learners, Individual differences, Input processing

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INTRODUCTION

Despite the diversities amongst the SLA theories on how language acquisition takes place, researchers unanimously agree upon the vital role of input both in the first and second language acquisition, holding that without some form of input, language acquisition cannot occur. Besides the prominent role given to input, some scholars have also considered attention as a construct that plays a significant role in SLA (Lee & Benati, 2013; Schmidt, 2010; VanPatten, 2007). Schmidt (1990) finds attention to the input as a prerequisite for language acquisition. He contends that L2 learners must consciously notice input and be aware of its features to process and incorporate it into their linguistic system.

The allocation of attention sheds light on three relevant concepts known as *capacity*, *selection*, and *effort*. According to VanPatten and Benati (2010), L2 learners at elementary or low – intermediate levels are limited capacity processors, so when their sensory systems have to deal with a massive amount of linguistic data, they have to select what to notice in the input. In fact, due to the constraints in the L2 learners' working memory, it is practically impossible for them to allocate their attention both to the meaning and form of the input. Thus, to avoid cognitive overload, L2 learners might sacrifice meaning for form or vice versa.

Additionally, Lee and Benati (2013) hold that the capacity demand of a task determines how the L2 learners' attentional resources get exhausted, that is, when the capacity demand of a task is high, attending to it becomes effortful, but when the capacity demand of the task is low, the learners' attentional resources will be free to conduct a secondary task.

Although numerous empirical studies have addressed the impact of various internal and external factors on the learners' input processing, there is paucity of empirical studies addressing cognitive-based learner differences which might affect their allocation of attention to the input. The concept of individual differences deserves attention because not all learners acquire language in the same way. The diversities observed among L2

learners might partially result from the way they process input. The researcher contends that as L2 learners vary in their level of language proficiency and their final level of attainment, their learning styles can also have a crucial role in their input processing, leading them towards an *analysis-orientation approach*, prioritizing attention to systematic rules, or a *meaning-orientation approach*, valuing meaningful chunks to forms (Skehan, 1998).

Among the external factors which might affect how L2 learners divide their attention between the meaning and form is input modality. Some researchers postulate that due to the cognitive load imposed on the learners' working memory, meaning and form compete for attentional resources specially when the input is presented through oral mode (Ito & Wong, 2019; VanPatten, 1990; Wong, 2001). Although the impact of input modalities on the learners' attention had been addressed in several studies (VanPatten 1990; Wong, 2001), the impact of learning styles and input modalities and the way they might interact to influence the process, to the best of the researcher's knowledge, had never been reported before. Therefore, the present study was conducted to investigate how L2 learners, who possess different learning styles direct their attention towards the meaning and form when exposed to different input modalities. The result of the study can provide additional insights into the importance of individual differences and how such variations can relate to language acquisition. Furthermore, it encourages taking into account the impact of learning styles in formal settings to promote language achievement.

LITERATURE REVIEW

Most scholars in the field of SLA acknowledge the vital role of input in language acquisition and maintain that without exposure to input, language acquisition is impossible. To clarify the nature of input, scholars have offered various definitions for it; however, the definition offered by Chaudron (1985, p. 3) suggests that "input is the raw data from which they

[learners] derive both meaning and awareness of the rules and structures of the target language". Learners need to perceive the rules and structures of the target language to construct their interlanguage system, or as Han and Sun (2014, p. 8) state, input supplies learners with "the data to formulate, confirm, and revise hypotheses about the target language in order to mentally develop a new linguistic system". Nevertheless, an issue which has not been resolved yet is how input is processed and incorporated into L2 learners' linguistic system. In other words, the question is how input turns into intake.

Undoubtedly of all the input presented to L2 learners, only part of it is processed, and the rest seems to be left unattended. According to VanPatten (1990, p. 287), intake is "a subset of the input that the learner actually perceives and processes." Other scholars (Schmidt, 1990; VanPatten, 2007; Wong, 2001) consider a more active role for language learners and argue that for successful language learning to take place, formal features of the language should first be consciously attended to. Amongst the SLA scholars, Schmidt (2010) considers a central role for conscious attention to linguistic features and proposes that SLA can take place when the input to which a learner is exposed is consciously registered. He also classifies consciousness into three categories:
 (a) Consciousness as intention: Schmidt juxtaposes intentional learning vs. incidental learning, illustrating that incidental learning takes place when, for example, a person intending to read a book, develops his vocabulary repertoire, (b) Consciousness as attention: The concept refers to paying conscious attention to a linguistic cue in the input. He underscores the facilitative role of having focused attention on a linguistic stimulus to acquire it. Additionally, Schmidt (2010, p. 4) asserts that attention is not a single concept and encompasses a range of subsystems, that is "alertness, orientation, and detection within selective attention, facilitation, and inhibition", all of which control IP, and (c) Consciousness as awareness: Schmidt argues that the link between consciousness and awareness is controversial. A learner who attends to a linguistic feature is undoubtedly

aware of it, yet "awareness of abstract rules of grammar cannot be a prerequisite for learning"(p. 5). His view stems from the fact that native speakers and some advanced language learners who have acquired language naturally cannot verbalize their linguistic knowledge (Rothman, 2008).

Schmidt (2001) further proposes that noticing, which refers to the focused attention to a specific feature of linguistic data, is essential for SLA, but metalinguistic awareness of all kinds is not required and has only a facilitative role. Although his viewpoint regarding the role of awareness in language acquisition cannot easily be validated, there is a growing body of research supportive of noticing hypothesis and confirming that more attention leads to more learning (Mackey, 2006; Robinson, Mackey, Gass, & Schmidt, 2012; Skibba, 2018). The controversial issue of whether without attention any learning can occur has not been resolved, nor have there been any reports against the claim that L2 learners acquire a linguistic stimulus when they pay attention to it.

Another subject of controversy put forward by Logan, Taylor, and Etherton, (1996) is that attention should be driven specifically to an attribute of a stimulus to be acquired. As Schmidt (2010, p.5) states, "attention must be specifically focused and not just global." which implies that for learning phonology, for instance, one should attend to the sound system of the input.

Regarding the role of conscious attention to linguistic data, VanPatten (1990) suggests that L2 learners have difficulty simultaneously attending to the form and content of the oral input, especially when the linguistic form does not play a crucial role in understanding the message. As VanPatten suggests, "given the limited capacity for processing involved in conscious attention", and the fact that "conscious processing during learning, in general, is serial and effortful in nature, it is doubtful that learners in the early and intermediate stages of acquisition pay much conscious attention to form in the input" (p. 288).

Some scholars (Benati, 2013; VanPatten, 2003) also assert that due

to the limited capacity of the L2 learners' working memory, simultaneous attention to form and content can occur only when their attentional resources are not drained. In other words, when L2 learners can easily understand the message, their attention is released to focus on the form of the input. Otherwise, IP will translate into the partial processing of the input or interference.

Reviewing the related literature shows that a considerable number of empirical studies have investigated how different factors might affect L2 learners' allocation of attention to form and content (Godfroid, 2010; Han & Peverly, 2007; Han & Sun, 2014). According to Schmidt (2010), factors influencing L2 learners' attention to the input they receive can generally be classified as internal (e.g., different cognitive styles, L2 knowledge, motivation) and external (the complexity of input, types of instruction, the context).

In the present study, the impact of two factors which might affect L2 learners' IP has been considered. The internal factor is learning style which reflects an aspect of individual differences and the external factor is input modality.

Learning Styles

The concept of learning style has usually been linked with particular ways in which individuals process information. As Skehan (1991, p. 288) suggests, learning style is "a general disposition, voluntary or not, toward processing information in a particular way". In line with Skehan, Horwitz (2008, p. 12) defines learning style as "persistent and instinctive ways that individuals process information when they are faced with a learning situation." To define the amorphous nature of learning style, Brown (2007) states that the basis of our approach to learning, in general, is our *cognition* and *personality*, but they turn into learning style when the educational contexts are concerned. Thus, as Khodashenas Tavakoly, Kiany, and Hashemi (2018) hold, learning style has a broader spectrum since it encompasses cognitive,

affective and physiological traits, as well.

Various classifications have been offered for learning styles although some blur the boundaries between the individual learning styles. Thus, in order to avoid such confusions, Ehrman and Leaver (2003) offer their Construct Model to organize the existing learning styles into overarching categories. In their model, the term *Synoptic* has been ascribed to those individuals who possess a holistic approach, and the term *Ectenic* has been attributed to the individuals whose approach is atomistic and extended. When the holistic learners strive to learn a language, they rely on their intuition; conversely, the atomistic learners consciously control their learning process (Leaver, Ehrman & Shekhtman, 2005).

SLA scholars invariably hold that learning styles are not dichotomous and differ along a continuum (Dörnyei 2005; Oxford, 2003). They are value-neutral, which means that an L2 learner can be successful no matter what his/her preferred learning style is. However, as different educational settings entail different learning styles, a "bicognitive" learner acts more successfully when the need arises. Therefore, it is suggested that learners be directed to develop opposing learning styles to cater for different learning environments (Gooniband, Jalilifar, & Ahmadpour, 2016).

PURPOSE OF THE STUDY

Some facets of individual differences, such as limitations in the general cognitive capacities, age, and gender have been shown to influence an individual's attending to form and content of the input (Lee & McNulty, 2013; Sagarra, 2017); however, an unexplored area is how learning style might particularly influence this process. The present study aimed at investigating how learners with different learning styles simultaneously attend to the meaning and formal features of the input when they are exposed to different modalities. Thus to achieve the purposes of the study, the following research questions were formulated:

1. How do holistic and atomistic learners allocate their attention to the

meaning and form of the input?

2. What is the difference between the atomistic and holistic learners' attending to form and meaning when different input modes are employed?

METHOD

Participants

The participants initially consisted of 90 male and female students studying English Literature at Islamic Azad University, North Tehran Branch. They belonged to three intact groups and their age range was from 18 to 24. To minimize the amount of exposure to the target structures, only the freshmen undertaking the course of Grammar One were selected for the study. The students who had already received instructions on the target structures or did not manage to attend the sessions allocated to instruction or assessment were discarded from the data analysis. Thus excluding those who did not meet the criteria set for the present study resulted in a decrease in the number of participants to 73.

Instrumentation

The following instruments were implemented for data collection:

1. E & L Construct Questionnaire (Ehrman & Leaver, 2003) was administered to determine the learning styles. The questionnaire comprises 30 items which measure the individual's learning style on a Likert Scale. The learners' learning preferences are placed on a line from one to nine in two opposite directions. Therefore, a student's learning style may tend towards either of the two sides or be placed somewhere in the middle (See Appendix A)

2. A General Language Proficiency Test (GLPT) was implemented to examine the homogeneity of the participants. GLPT was originally a sample of Preliminary English Test (PET), yet the speaking part

of it was excluded. The data analysis carried out on GLPT showed that the reliability index of GLPT, as calculated through KR-21, was 0.74.

3. A target structure test comprising sentence-level multiple –choice items was administered to examine the participants' grammatical knowledge and to exclude those familiar with the target structures. The test covered the target structures; however, to divert the learners' attention away from the purpose of the test, 10 irrelevant items were also included. The target structure test was originally developed by the researcher; but to ensure the content validity of it, the items were meticulously checked by three university instructors for the appropriateness, accuracy and efficiency in terms of the content, timing and method of scoring. The reliability of the test calculated through KR-21 also showed an acceptable index (r= 0.74).

4. REI tasks including 10-sentence level items, in both written and oral modes, were employed to discover how the participants would allocate their attention between form and meaning when they were exposed to different input modalities (See Appendices B-D). The tasks were called reconstructive, because the participants were required to reconstruct the items of the linguistic data by responding to the questions exposed to them. In REI tasks, the participants were required to attend to the meaning of the input before reproducing the responses. The items were designed in such a way that they would prevent test-takers from attending just to the formal features of the linguistic data and neglecting meaning. If the test-takers were not required to process meaning first, it would have been practically impossible to identify those who majorly attended to the meaning of the input. The tasks were designed based on the guidelines available in the literature (Ellis, 2005; Erlam, 2006).

5. A structured interview was also administered to find out how L2 learners with different learning styles approached input processing.

For this purpose, 50 individuals were randomly interviewed by the researcher regarding how they would consciously attend to the form and content of the input. To limit the participants' responses, a structured format was employed. As Richards (2015, p. 137) states, the belief that students carry with them to their classrooms affects what strategies they should use, or what aspect of the language is the most important, or generally speaking "how they should approach the task of language learning".

It should be mentioned that both the REI tasks and the target structure test used for data collection were first piloted on 45 male and female first-year students who were studying English Translation at Islamic Azad University, North Tehran Branch. Piloting them resulted in the omission and modification of some items, as well as reducing the allocated time for doing them.

The Target Structures

Causative Form: One of the English structures selected for the present study was the causative form both in the active and passive forms. The rationale behind adopting this grammatical form is multifaceted: Firstly, due to the discrepancy between the ways English and Persian causative sentences are formed, comprehending and producing causative sentences are cumbersome for the Iranian EFL learners. As Birjandi and Rahemi (2009) state, causativization in Persian is hinged upon a morphological process, that is, by inserting /än/ to a transitive verb, such as *charkhidan* [to turn around], the causative verb of *charkhändan* [to cause something to turn around] is constructed, whereas in English the lexical or periphrastic causativisations are formed. Secondly, the difficulty of using the causative structure for the Iranian EFL learners lies in the fact that based on the First Noun Principle of VanPatten's IP Model (VanPatten, 1996, 2004), they presumably process the first noun in a sentence as the subject/agent of it.

VanPatten's (2004) Sentence Location Principle also points to this faulty strategy by stating that L2 learners normally rely on the items placed in the initial position before those in the middle or final positions to interpret the meaning of the sentence. However, to interpret the meaning of the English causative structure correctly, the Iranian EFL learners have to attend to the formal features of the sentences, as well. Finally, the Iranian EFL learners interpret "have" as "possess" and "get" as "obtain"; thus assigning the right meanings to these key words of causative structure entails focusing more on the form.

Present Subjunctive: Present subjunctive signifies urgency or importance. The main clause of the present subjunctive may include a verb (e.g., demand, order, suggest), an adjective (e.g., vital, necessary, imperative), or a noun (e.g., advice, requirement). In the present subjunctive, the infinitive form of the verb is used in the subordinate clause, which becomes distinctive in the use of the bare infinitive "be" (e.g., It is obligatory that the letter be posted immediately.), the third person singular verbs (e.g., I suggest that she see a dentist today.), and negations (e.g., The dentist insisted that the child not eat chocolate.).

Choosing this structure was based on several processing problems that L2 learners must cope with: Firstly, according to the Lexical Preference Principle, L2 learners rely on the lexical items to grasp the meaning (VanPatten, 2004). As the lexical items located in the main clause convey the concept of urgency, they might miss the subjunctive verbs located in the subordinate clause. Secondly, based on the Sentence Location Principle (VanPatten, 2004), L2 learners normally process the items in the initial positions before the ones in the medial or final positions, and since the subjunctive verbs are located in the medial position of the subordinate clauses, L2 learners are less likely to process them before the other items. Finally, as the third person singular s-marker does not appear in the subjunctive mood, processing the subjunctive mood might be difficult for the L2 learners.

Data Collection Procedure

The present study aimed to explore how the EFL learners with opposing learning styles might allocate their attention when exposed to the input in different modes. Learning styles, comprising two levels of atomistic and holistic learning, were the independent variables, and the L2 learners' IP approaches with two levels of focus on form and focus on content, were the independent variables and input modalities were the moderating variables. The following procedure was adopted to achieve the specified goals.

At the initial step, 90 participants completed the E &L Construct Questionnaire to figure out whether their learning styles were mostly atomistic or holistic. During the administration of the questionnaire, the researcher was present to clarify any difficulties the participants might encounter. The procedure adopted to score the items of the questionnaire was based upon the scoring key of the E &L Construct Questionnaire. In the next step, GLPT was administered to ensure the homogeneity of the participants. Based on the results of GLPT, those individuals who scored within one standard deviation below and above the mean were selected. The time allocation for the test was 120 minutes. Each correct response to the individual items was given one point, but no penalty was considered for the wrong ones. To control the background knowledge as a variable which could affect the result, the researcher decided to exclude those participants who had some prior knowledge of the target structures. To this end, a test of 40 sentence –level items was administered, and arbitrarily those who correctly marked more than 50% of the items were excluded from the study. It should be mentioned that to examine the content validity of the test, three university instructors who had been teaching grammar for ten years or more reviewed it. Their comments caused the removal or modification of the items.

As one of the requirements of the B.A. degree, all university students studying English Literature are required to take grammar courses

in two consecutive semesters. The instruction regularly adopted for such classes comprises offering explicit information about the target structure followed by having them complete some relevant comprehension-based and production-based activities. Without drawing the students' particular attention to the target structures of the present study during the term, the researcher herself administered all the assessment measures. These tests were considered to be as parts of the quizzes the participants usually were required to take during their grammar courses.

Implementing REI Tasks

The REI tasks were constructed in such a way that they hampered the participants' rote memorization of the items when they had to repeat them. The difficulty of attending to the form and content of the input is most observable when the target structure chosen for the study has a communicative value (Wong, 2001); therefore, it was essential that the learners be involved in meaningful REI tasks. In this regard, Erlam (2006) mentions two main features of the REI tasks: 1) The tasks should first draw the learners' attention to meaning; 2) The participants should have some time lapse between being exposed to the stimuli and their repetition of them. The REI tasks were constructed both in the reading and listening modes to help the researcher explore how input modalities might affect the learners' attention to form and meaning.

The reading section of the REI tasks comprised 10 sentences which were thematically similar. The use of the thematically similar structure was derived from the suggestion made by Erlam (2006), who postulates that thematically similar sentences direct learners' attention to meaning and hamper rote repetition of them. Thus, the REI reading task was implemented after the learners had received the explicit information on the target structures followed by some related activities. The participants were exposed to the reading sections of the REI task via computer screen. After reading the 10 items, they did not have access to

the input anymore and had to write verbatim what they could remember from what they had read on the computer screen. The sentences which were correctly remembered received one score, the grammatically correct sentences, bearing the same content but in a different structure, were also scored one, but the incomplete or ungrammatical sentences were not allocated any points.

For the oral section of the REI, the participants listened to a statement and expressed their viewpoints about it by marking one of the items of agree, disagree or undecided on their answer sheets and then tried to repeat what they had heard. In this way, there was a time gap between receiving the oral input and the learners' repetition, which prevented them from meaningless rote memorization of the statements.

Participants' responses were first audiotaped and then classified into three types for further analysis: Accurate repetition of the statements (indicating that they attended to the form), rewording the same idea in a different structure (suggesting that they attended to the meaning of the message), and failure to complete a statement or erroneous reproduction of the statements. In each of the first two cases, the students' utterances were allocated one point, but in the third case, the erroneous or incomplete utterances received zero.

In the structured interview phase, 50 holistic and atomistic learners participated. In response to the question "What would you mostly attend to in an oral or written English text, form or meaning?" they were required to say either "form" or "meaning". In order to minimize the possibility of misunderstanding the question, the interviews were conducted in Persian, the participants' native language. Their responses were first audiotaped and then reported in percentages.

Data Analysis

In the present study, both qualitative and quantitative methods were adopted to analyze the collected data. Through quantitative method, an

independent *t*-tests was run on the scores obtained from GLPT to compare the general language proficiency of the two groups of atomistic and holistic learners. Likewise, another independent t-test was implemented to compare the participants' knowledge of target structures. In the next phase, Chi-square tests were run for each of the two groups to compare the extent to which they attended to form and meaning during REI tasks.

Through the qualitative method, the structured interview was carried out to obtain further evidence regarding how the atomistic and holistic learners would allocate their attention between meaning and form. For this purpose, all the participants' interviews were first audiotaped. Then, the individuals in either of the two learning styles were classified into those who said that they would attend to the form of the input and those who would focus on the meaning. Then the number of responses (meanings and forms) in each learning style was counted up and presented in percentages.

RESULTS

The statistical analyses of the collected data produced the following results: The descriptive statistics of the two groups (The Holistic group: M = 22.56, SD = 5.04, and Atomistic group: M = 21.44, SD = 6.92) showed almost the same means on the GLPT. To ensure that the two groups enjoyed the same level of general language proficiency, an independent samples t-test was run. As Table 1 shows, the result of the *t*-test, (t (59) = .782, p > .05, r = .10) revealed a weak effect size, suggesting that the discrepancy between the two groups' mean scores on GLPT was insignificant and the two groups' language proficiency was almost equal at the onset of the study.

Table 1: Independent Samples Test, GLPT by groups

	Levene's Test for Equality of Variances		of *t*-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	4.684	.034	.799	71	.427	1.123	1.406	-1.68	3.927
Equal variances not assumed			.782	59.544	.437	1.123	1.436	-1.75	3.997

The descriptive analysis of the scores on the target structures test showed almost the same mean scores (The holistics: M = 21.74, SD = 5.35, and the atomistics M = 23.47, SD = 6.44).

To guarantee that the two groups' knowledge of the target structures was at the same level, another independent samples *t*-test was run to compare the mean scores. The results of the independent *t*-test (t (71) = 1.25, *p* > .05, r = .14 representing a weak effect size) showed that the difference between the means of the two groups was not significant implying that their knowledge of the English grammar was almost equal (Table 2).

Table 2: Independent Samples Test, Target structures by groups

	Levene's Test for Equality of Variances		*t*-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.841	.362	1.250	71	.215	1.727	1.381	-1.02	4.481
Equal variances not assumed			1.235	64.41	.221	1.727	1.399	-1.06	4.521

**The First Research Question: The holistic and the atomistic learners'
attending to the meaning and form of the input**

The Holistic Learners

A test of Chi-square was run to compare the extent to which the students
attended to the form and meaning when processing the input in written and
oral modes. The results of the data analysis showed a significant difference
between the holistic group's use of meaning and form when IP in different
input modalities was concerned. As Table 3 indicates, during the oral task
the holistic learners focused on form 70.5% and on meaning 29.5% of the
time, but during the written task, they focused on the meaning 59.4% and
form 40.6% of the time.

Table 3: The holistic group'stallocation of attention to meaning & form in
different input modes

| | | | Type | | Total |
			Form	Meaning	
Skill	Listening	Count	148	62	210
		% within Skill	70.5%	29.5%	100.0%
		Std. Residual	3.3	-3.6	
	Reading	Count	108	158	266
		% within Skill	40.6%	59.4%	100.0%
		Std. Residual	-2.9	3.2	
Total		Count	256	220	476
		% within Skill	53.8%	46.2%	100.0%

As Table 4 illustrates, the results of Chi-square ($\chi 2$ (1) = 40.94, $p < .05$)
indicated significant differences between the holistic learners' attending to
form and content when they were processing input in the oral or written
tasks.

Table 4: Chi-square tests; holistic learners' attention to the meaning & form

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	42.136[a]	1	.000		
Continuity Correction[b]	40.943	1	.000		
Likelihood Ratio	43.005	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	42.047	1	.000		
N of Valid Cases	476				

Note. a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 97.06.

b. Computed only for a 2x2 table

Based on the obtained Cramer's V and Phi values (.29, $p < .05$, representing a large effect size), the Chi-square value of 40.94 suggested a large effect size. The analysis suggested that there were significant differences between the holistic learners' attention to form and meaning when they were exposed to the written and oral input. While they could evenly direct their attention to the meaning and form during oral input, they could allocate their attention to both meaning and form when exposed to the written input.

The Atomistic Learners

All over again, Chi-square was used to assess the atomistic learners' attending to form and content in the oral and written tasks. Table 5 shows that during the processing of oral input, the atomistic learners focused on form 72.2 % and meaning 27.8 % of the time. They also used 52.1 % meaning and 47.9 % form when processing the written input.

Table 5. The atomistic learners' allocation of attention to meaning & form in different input modes

			Type		Total
			Form	Meaning	
Skill	Listening	Count	280	108	388
		% within Skill	72.2%	27.8%	100.0%
		Std. Residual	3.5	-4.2	
	Reading	Count	238	259	497
		% within Skill	47.9%	52.1%	100.0%
		Std. Residual	-3.1	3.7	
Total		Count	518	367	885
		% within Skill	58.5%	41.5%	100.0%

Table 6 indicates that the results of chi-square (χ^2 (1) = 51.91, p < .05) revealed significant differences between the atomistic learners' focus on form and content when input modalities differed.

Table 6: Chi-square tests; atomistic learners' attention to meaning & form

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	52.911[a]	1	.000		
Continuity Correction[b]	51.916	1	.000		
Likelihood Ratio	53.962	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	52.851	1	.000		
N of Valid Cases	885				

Note. a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 160.90.

b. Computed only for a 2x2 table

The Cramer's V and Phi values of e24, $p < .05$, representing a large effect size, also suggested a large effect size for the Chi-square value of 51.91. The findings point to the fact that during the oral task, processing of the formal features hampered the learners' attending to the content of the input. As Tables 4 and 6 indicate, in both groups processing the formal aspect of the linguistic data, could only result in the poor processing of the content of the input. However, during the reading task, the learners could equally attend to both aspects. The result underscores the fact that regardless of the learners' learning styles, they could process written input more successfully than the oral input.

However, another important finding which might highlight the impact of learning styles on the learners' attention to the form and content was that as the atomistic learners outperformed the holistic learners in the processing of the formal features, the atomistic learners tended more towards form-based processing in comparison to the holistic learners' performance.

The Second Research Question: The difference between the holistic and atomistic learners' attention to form and meaning in different input modes

To find the answer to the second research question and because of the nature of categorical variables involved, the researcher conducted a Chi-square analysis (Tables 4 & 6). As Pallant (2007) suggests, to explore the relationship between categorical variables, which might have two or more levels, a Chi-square test is recommended. Thus, the results of Chi-square tests displayed in the tables 4 and 6 could also be used to answer the second research question. As it was indicated, input modes could be a determining factor influencing how the atomistic and holistic learners processed input. Both the holistic and atomistic learners could not allocate their attentional resources equally to meaning and form when exposed to the oral input. However, they could direct their attention both to the meaning and form

when processing written input, which suggests that their attentional resources are less taxed in the written mode.

Structured Interview

A total of 50 individuals (24 atomistic and 26 holistic learners) were randomly selected for a structured interview. The interviews could help researcher obtain more robust evidence regarding how learners' learning styles might influence their focus on meaning or form. The participants were asked whether they would mostly pay attention to the meaning or form when they read a text or listen to it.

The results indicated that among the 24 atomistic learners taking part in the interview, 16 learners responded that they would prefer meaning and only eight of them said that they would go for the form. When asked the same question, 21 holistic learners stated that they would attend to the meaning and only five of them said that they focus on the form of the input. The analysis revealed that even though the majority of the participants in both groups expressed their preferences for meaning, still the atomistic group outnumbered the holistic learners in consciously attending to the formal features of the input.

DISCUSSION

The present study aimed to explore how the EFL learners with opposing learning styles might attend to the form and meaning of the input when exposed to different input modalities. The results of the data analyses, as displayed in the tables 3 and 5, indicated that learning style could affect how EFL learners attend to the meaning and form of the input. The statistical analysis showed that the atomistic learners outperformed the holistic learners in attending to the formal features of the language while the holistic learners could focus more on the meaning of the input. The data analyses presented in the tables 4 and 6 revealed that input modalities could affect how EFL learners attend to the meaning and form of the input.

The Chi-square value of 40.94, presented in the tables 4, indicated there was a significant difference between the holistic learners' focusing on meaning and form when they received oral and written input. When exposed to the oral input, the holistic participants failed to allocate their attentions both to the meaning and form of the input; however, they performed more successfully in attending to both meaning and form when they were required to take REI written test. Likewise, the chi-square value of 51.91, as displayed in the table 6, suggested that atomistic learners had more difficulty attending to both form and meaning in the oral mode. It seems that their attentional resources were more taxed when they had to take part in the REI oral test, so they managed to attend to 72% of the formal features but they allocated their attention to only 27% of the meaning of what they were listening to.

Among the 50 individuals who participated in the structured interview, 74% stated that they would prefer meaning and only 26% said that they usually attended to the form of it. However, the interview revealed that despite the fact that the majority admitted they would first attend to the meaning of the input, still the atomistic learners outnumbered the holistic learners in attending to the formal features of the input. Regardless of the view presented by some researchers (Benati, 2013; VanPatten, 2003) that EFL learners' memory capacity is limited, it seems that the strategy adopted by the atomistic learners tended more towards a form-based style while the holistic learners adopted a meaning-based approach. This finding runs counter to the Primacy of Meaning Principle, which suggests that IP for all learners is meaning–based (VanPatten, 1996, 2004).The discrepancy observed between the strategies adopted by the two groups suggests that various internal and external factors might affect the EFL learners' mechanisms to IP and learning styles can presumably be considered as one such factors affecting the way the EFL learners' attentional resources are exhausted. This viewpoint finds support from Han and Liu (2013), who argued that IP for all EFL learners is not meaning-based and stated that the participants of their study, who were zero

beginners of Chinese, regardless of the input modalities or their first language, adopted a form-based approach.

The result of the present research is also consistent with Han and Peverly (2007), who introduced language proficiency as a determining factor which affects L2 learners' attention to form and meaning. They argued that learners with a high level of language proficiency could attend both to the meaning and to the formal features of the input; however, less proficient learners adopted a form-based strategy.

The difficulty the participants had attending to the formal features of the language when exposed to the oral input is in line with Wong (2001), who reported that input modality could affect L2 learners' attending to the meaning and form. The present study also finds support from some studies by Han and Peverly (2007), Lund (1991), and Park (2011), who indicated that because L2 learners were more in control of the written text and because the written input is clearly segmented, processing of it would be less demanding. In other words, they argued that input modality can be a determining variable regarding how the attentional resources of the learners are exhausted.

The findings related to the impact of input modalities revealed that for both groups processing of the oral input is more difficult than that of the written input. This highlights the fact that the learners' attentional resources are more taxed during the processing of the oral input. However, the atomistic learners' processing of the formal features was more effective than that of the holistic groups. Likewise, examining the statistics related to their IP of the reading task also indicated that the atomistic group processed formal features more successfully than the holistic learners.

The finding of the present study highlights the importance of learning styles and the EFL learners' natural preferences to process input, which causes them to be analysis-oriented and perceive the formal features of the language through an analytic approach or to value the communicative aspect of language use and have a meaning- oriented to IP. The findings offers some pedagogical implications for language learning

and teaching which can have practical values in an EFL context.

CONCLUSION AND IMPLICATIONS

The present study examined how learners with different learning styles allocate their attention to form and meaning when they process input. The rationale upon which the study was rested was that L2 learners are limited capacity processors and when exposed to the input, to avoid cognitive overload, they might selectively attend to the form or meaning of the input. Additionally, the study aimed to investigate how L2 learners with different learning styles would divide their attentional resources between meaning and form when they were exposed to the oral and written input. The findings revealed that learning style causes the atomistic learners to employ an analytic-orientation and the holistic learners to gravitate towards a meaning-oriented approach. It was also revealed that due to the constraints imposed on the learners' working memory, listening skill would drain more of the attentional resources of the EFL learners, thus simultaneous attention to the form and meaning was more cumbersome to both groups. However, the results of the present study indicated that in REI oral task, the atomistic group outperformed the holistic learners in attending to the formal features of the input. An important point which is worth mentioning here is that one cannot definitely hold that focusing on the form of the input, at least in the written mode, causes the learners to miss the meaning. Rather, the degree of exhaustion of the attentional resources depends on various factors, such as the level of language proficiency, the age of the EFL learner, the saliency of the form or the communicative value of it, etc. (Wong, 2001). Yet, exploring the efficacy of these factors was beyond the scope of this study and subsequent research is required to clarify the issue. All in all, what can be inferred from the findings is that learning style is a crucial factor, leading the EFL learners how to divide their attention between form and meaning of the input, but input modality can only influence the process.

The pedagogical contribution of the present study finds expression

in language classes. In the educational contexts, where the learners become aware of their natural learning styles and where the style mismatches occur, teachers might perceive them as opportunities to help their learners practice *style-stretching*. In style-stretching or style-flexing, L2 learners develop the ability to use appropriate styles to cope with various requirements of the language learning contexts. Teachers can explicitly devise certain tasks which require the learners to move beyond their preferred cognitive styles and employ the approaches they normally avoid.

Another pedagogical implication of the present study is employing different types of input enhancement (Sharwood-Smith, 1993) both in the written and oral modes. Input-enhancement, as an instructional technique, manipulates the formal features of the input to make them more salient to EFL learners. So this technique can specifically be beneficial to the meaning- oriented learners.

Due to some limitations imposed on the present study, the findings should be interpreted with caution. First of all, due to some administrative restrictions imposed by the university authorities, the researcher did not manage to have a random selection of the groups. Second, attending to the form and meaning might have been influenced by the nature of the target structures chosen for the study; further studies on some other grammatical structures should be carried out to substantiate the findings.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix A

Part of the E & L Construct Questionnaire

Name: _____

INSTRUCTIONS:

Mark in the space for each pair of items what you think you are like. For example, if you like bicycling <u>much</u> more than swimming, you might mark in space 2 (or even 1), like this:

I like riding a bicycle.   I like swimming.
   0. Most like this ___   _x_ ___ ___ ___ ___ ___ ___ ___ Most like this
                        1   2   3   4   5   6   7   8   9

If you sort of like swimming better, you might mark in space 6.

I like riding a bicycle.   I like swimming.
   0. Most like this ___ ___ ___ ___ ___ _x_ ___ ___ ___ Most like this
                        1   2   3   4   5   6   7   8   9

If you think you are in the middle or really do both equally, use space 5. Try to avoid using space 5 if you can.

I like riding a bicycle.   I like swimming.
   0. Most like this ___ ___ ___ ___ _x_ ___ ___ ___ ___ Most like this
                        1   2   3   4   5   6   7   8   9

<u>There are no right or wrong answers on this questionnaire</u>.

****
Here are the questions:

1. When I work with new language in   I don't usually get much from the context
context, in stories or articles or at   unless I pay close attention to what sentences;
I often pick up new words, ideas,   I'm doing.
etc., that way, without planning in advance.

   1. Most like this   ___ ___ ___ ___ ___ ___ ___ ___ ___   Most like this
                        1   2   3   4   5   6   7   8   9

2. When working with new material with   When there is a lot of information that comes
additional subject matter around it, I   with what I need to learn, it's hard to tell   what's
comfortably find and use what is most   most important. It all seems to fall together
most important.   sometimes, and it's hard work to sort things out.

   2. Most like this   ___ ___ ___ ___ ___ ___ ___ ___ ___   Most like this
                        1   2   3   4   5   6   7   8   9

   3. I like to reduce differences and look for   I like to explore differences and
   similarities.   disparities among things.

   3. Most like this   ___ ___ ___ ___ ___ ___ ___ ___ ___   Most like this
                        1   2   3   4   5   6   7   8   9

4. I tend to be most aware of the 'big picture;'   I notice specifics and details quickly.

   4. Most like this   ___ ___ ___ ___ ___ ___ ___ ___ ___   Most like this
                        1   2   3   4   5   6   7   8   9

Appendix B

A sample of the script used in the REI Task (Oral Mode)

1. I is important that our government support the homeless.
2. I suggest that mothers do their children's homework.
3. We shouldn't get our friends to lend us some money unless we have to.
4. The government is responsible to have all kids vaccinated during the school years.

Appendix C

A Sample of the REI Task (Written mode)

Mr. and Mrs. Smith are going on a tour to the North. They have asked their daughter to do various daily chores while they are away. Please read what they have asked their daughter to do:

1. The flowers in the garden must be watered every day.
2. Take the car to the garage to have it serviced.
3. It's important that the floor be vacuumed every morning.
4. It's vital that the fish tank be cleaned.

Appendix D

Part of the Answer Sheet used for the REI Task (Written mode)

Using the words and phrases given in each item, try to remember the statements you have just read and write them down in the spaces provided.

1. THE FLOWERS: --
2. THE CAR: --
3. THE FLOOR: ---
4. THE FISH TANK: ---