Morphological Complexity across Descriptive, Expository, and Narrative Text Types in Iranian Lower-Intermediate Language Learners

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Abstract

Morphological complexity is one of the dimensions of complexity that has been increasingly analyzed over the last few years. However, results from previous studies drawing on only a single text type are inconclusive. The purpose of this study was to determine the effect of text types (descriptive, narrative, and expository) on the morphological complexity of essays written by Iranian English language learners. The participants included 87 lower-intermediate male and female L2 learners at six language institutes in Qazvin, Iran, who were selected from 127 language learners taking an Oxford Quick Placement test. The participants wrote on each text type in three consecutive weeks as a part of their classroom activity. The morphological complexity of verbs and nouns was separately calculated using the morphological complexity index. The data were analyzed using a series of Friedman and Wilcoxon Signed Rank Tests. The findings did not show any statistically significant differences across text types for nominal inflectional diversity; however, verbal inflectional diversity was statistically significant across text types, with narrative essays morphologically more complex than descriptive and expository essays. The findings may have theoretical and pedagogical implications for researchers and L2 teachers.

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INTRODUCTION

One of the aspects of linguistic complexity is morphological complexity (MC). Regardless of the arguments about the superfluous essence of MC in constructing meaning in comparison to syntax, MC is an essential part of grammar, especially in richly inflected languages (Anderson, 2015). Three factors influence L2 MC. Firstly, from a cross-linguistic point of view, the target language itself affects learners' performance on MC. To put it more simply, the more complex the morphological system of a target language is, the more complex L2 texts will be. For instance, the comparison of the L2 Italian and L2 English texts indicated that L2 Italian texts were morphologically more complex than L2 English texts across different proficiency levels (Brezina & Pallotti, 2019). Secondly, the first language affects L2 morphological complexity. That is to say, the more complex the morphological system of the first language, the easier the learnability of the MC of the second language (van der Slik et al., 2019). Thirdly, proficiency also has a role in the production of morphological properties. As learners become more proficient in the target language, their texts will be morphologically more complex; however, this occurrence only holds about morphologically rich target languages. For example, in English as a morphologically simple language, MC has plateaued after intermediate level, while in morphologically complex languages like French, it has increased to very advanced levels (De Clercq & Housen, 2019).

In recent years, there has been a surge of studies in morphological complexity (Brezina & Pallotti, 2019; Bulte & Roothooft, 2020; De Clercq & Housen, 2019; Ehret & Szmrecsanyi, 2019; Housen & Siemoens, 2016; Vespoor et al., 2012). Results from these studies show that morphological complexity should be considered a significant part of linguistic complexity. Some of these researchers have examined morphological complexity in spoken and some in learners' written performances of narrative and argumentative text types.

Text types have an impact on learner's written performance. For

example, some researchers have examined the effect of text types on the lexical and syntactic complexity of L2 learners' performance (Lu, 2011; Staples & Reppen, 2016). These studies indicated that learners' lexical diversity, lexical sophistication, and syntactic complexity vary across different writing text types. Although studies such as De Clercq and Housen (2019), Horst and Collins (2006), and Yoon (2017) examined MC in narrative and argumentative texts, they pursued different purposes. De Clercq and Housen (2019), for instance, examined MC at different proficiency levels only in spoken narrative tasks. Horst and Collins (2006) tracked the development of MC only in narrative texts. Yoon (2017) studied the effect of topics on MC only in argumentative essays. There is a gap for analyzing the effect of text types on MC in the literature, since considering that text types require learners to use different grammatical and lexical features, the ignorance of the effect of text types on MC may lead to failure in measuring MC. That results in an inaccurate measurement of students' written performance.

LITERATURE REVIEW

In this section, it is attempted to discuss the notion of complexity in L2, the findings of the previous studies on morphological complexity, text types, and their effect on complexity.

The Notion of Complexity in L2

Complexity is a multi-layered construct made up of different levels and sublevels. Absolute complexity and relative complexity are two distinct ways that have been used to analyze complexity in second language studies (Miestamo et al., 2008). Relative complexity refers to the constructs that are perceived by learners as cognitively difficult, which is subjective and depends on learners' characteristics; therefore, it can be different from one learner to another (Kusters, 2008). On the other hand, absolute complexity refers to the number of elements and their relationships in a language

(Miestamo, 2008).

Complexity has also been categorized into three broad areas of discourse interactional complexity, propositional complexity, and linguistic complexity. Discourse interactional complexity refers to the complexity of discourse and pragmatic elements of the language like frequency of turn-taking in conversations (Gilabert et al., 2009). Propositional complexity refers to the complexity of the language and number of idea units that a speaker, or a writer, uses to convey a message or implement a task (Ellis & Barkhuizen, 2005). The most studied aspect of complexity in second language studies is linguistic complexity.

The analysis of linguistic complexity necessitates three levels of theoretical, observational, and analytical measures (Bulte & Housen, 2012). At the theoretical level, it must be clarified if complexity is measured at the system or structural level. The system refers to the complexity of a whole linguistic system, such as all grammatical rules of a language, whereas structural complexity refers to the complexity of the specific grammatical features (Bulte & Housen, 2014). At the observational level, the operationalization of complexity must be clarified. For instance, which aspect of the complexity should be analyzed: Morphological, syntactic, or phonological? If, for example, morphological complexity is to be analyzed, it must be clarified if it pertains to the sophistication of the forms or their frequency (Housen & Simoens, 2016; Pallotti, 2009). Finally, the measure of linguistic complexity must be elaborated as to how it quantifies complexity to comparable data (Norris & Ortega, 2009).

Morphological Complexity

Morphological complexity (MC) is a sub-level of linguistic complexity. It refers to the inflectional and derivational forms of words including frequency of tensed forms, frequency of modals, number of different verb forms, variety of past tense forms, and affixations (Bulte & Housen, 2012). MC has been investigated both from relative and absolute perspectives.

Earlier studies have mostly focused on the relative and developmental aspects of MC (Hopp, 2013). For example, Dekeyser (2005, 2016) enumerated different reasons why morphological complexity is difficult even for advanced learners. Recent studies have investigated morphological complexity more as an absolute quantitative facet of interlanguage systems (Housen et al., 2019). The results of these studies indicated that L2 morphological complexity is influenced by the morphological system of the first language (Schepens et al., 2013, 2015; van der Slik et al., 2019), the MC of the target language (Brezina & Pallotti, 2019), the length of L2 instruction (Ehret & Szmrecsanyi, 2019) and the proficiency of L2 learners (De Clercq & Housen, 2019).

Brezina and Pallotti (2019) suggested that MC would level off at a specific proficiency level. In other words, after a particular proficiency level, morphological diversity would not considerably change. This level of stagnation is independent of the learner's linguistic ability and depends on the MC of the target language. To put it another way, the comparison of the MC of the two languages of English and Italian indicated that the MC of L1 Italian essays was twice as high as that of their English counterparts. It implies that the size of MC depends on the system of the morphological complexity of the target language. Furthermore, MC scores correlated with the proficiency C-test in Italian, but not, in English; therefore, MC can be an indicator of proficiency in morphologically rich languages. While only very advanced learners reached native-like morphological diversity in L2 Italian, MC scores of English learners at different levels from B1 to C1 and L1 essays were not significantly different. Likewise, Bulte and Roothooft (2020) and De Clercq and Housen (2019) pointed out that the only significant difference in MC was found between non-adjacent proficiency levels, including the lowest proficiency level and more advanced ones in L2 English. These studies measured morphological complexity using the morphological complexity index (MCI) (Brezina & Pallotti, 2019).

MCI calculates the inflectional diversity of exponents attached to the verbs and nouns. In order to eliminate the effect of text length, it divides

texts randomly into 100 sections with 10 exponents. Then, it calculates a within-, and between, -section variety. Finally, MCI will be calculated using the following formula MCI = (within-subset variety + between-subset variety/2) – 1 (Brezina & Pallotti, 2019). The linguistic analysis of texts and the mathematical processes have been computerized available at (http://corpora.lancs.ac.uk/vocab/analysemorph.php). The present study used MCI to measure the MC of written texts.

Text Types

A text type is also known as a genre (Staples & Reppen, 2016) and task type (Ruiz-Funes, 2015) in the literature. However, Johns (2002) distinguished genres from text types in which one genre can consist of different text types. For example, a letter as a genre can be written using the text types of argumentation, or problem-solution. Besides, one genre can also contain different text types simultaneously; for example, the genre of the story can contain descriptive and narrative text types at the same time. Bloor (1998) argued that text types such as narration and argumentation could be used in the construction of different genres like a medical report.

Text types affect L2 writing performance, assessment, and linguistic features including syntactic and lexical complexity (Ahmadi & Mansoordehghan, 2014; Jeong, 2016; Jiuliang, 2014; Jong & Vercellotti, 2015; Park, 2013; Polio & Yoon, 2018; Qin & Uccelli, 2016; Staples & Reppen, 2016; Yoon, 2018; Yoon & Polio, 2016). Results from these studies showed higher syntactic complexity and lexical sophistication in argumentative than narrative writing. For example, Park (2013) pointed out that learners employed longer production units and phrase-level structures in argumentative pieces of writing than narrative ones.

Some studies in first language acquisition have analyzed the effect of text types on morphological complexity (Cutillas & Tolchinsky, 2016; Guan et al., 2019). Guan et al. (2019) stated that Chinese students' writing skills across different text types, including narrative, argumentative, and

expository, can be predicted by their morphological awareness.

As the above studies found, a text type influences lexical complexity and syntactic complexity. Despite the studies on the effect of text types on syntactic and lexical complexity in L2 studies and the effect of text types on MC in the first language, there is no study on the impact of text types on morphological complexity in SLA. The present study attempted to fill this gap in the existing literature. The results of this study can help researchers and teachers to manipulate and utilize the text types that best tap into learners' performance.

PURPOSE OF THE STUDY

The principal objective of this study was to determine the effect of writing text types on morphological complexity. Narrative, descriptive, and expository text types were used in the present study. In the present study, morphological complexity was operationalized as the verbal and nominal morphological markers. Therefore, this study addressed the following two research questions:

1. Are there any significant differences in the effects of narrative, descriptive, and expository text types on Iranian lower intermediate L2 learners' verbal inflectional diversity?
2. Are there any significant differences in the effects of narrative, descriptive, and expository text types on Iranian lower intermediate L2 learners' nominal inflectional diversity?

METHODOLOGY

Participants

The participants were 87 male and female Iranian students who were studying English at Gouyesh, Marefat, Sorena, Sefarat, Sadra, and Fatima language institutes in Qazvin, Iran. They were native speakers of Persian

with different age ranges (14-40 years old, mean age = 22.9), but their proficiency level was lower intermediate level. Table 1 illustrates the demographic information of the participants consisting of gender, age, educational background, and years spent studying English.

They were selected based on convenience sampling, which Dornyei (2010) defines as the most common type of sampling in L2 research and is usually used when the participants possess specific characteristics that are related to the purpose of the investigation.

Table 1. The Demographic Information of the Participants

Demographic categories	Frequency	Percent	Mean
Gender			
Male	32	36.8	
Female	55	63.2	
Total	87	100	
Age			22.9
Under 15	3	3.4	
15-20	27	31.0	
20-25	28	32.2	
25-30	19	21.8	
Above 30	10	11.5	
Total	87	100	
Educational level			
Junior high school	3	3.4	
High school	26	29.9	
Diploma	6	6.9	
Undergraduate	26	29.9	
B.A.	18	20.7	
M.A.	8	9.2	
Years of learning			4.5

Instruments

The instruments used in this study involved a language proficiency test and three writing text types including narrative, descriptive and expository, as fully discussed below.

Oxford Quick Placement Test (Version 2)

The students' proficiency level was checked using the Oxford Quick Placement test (OQPT) (Version 2). The test contains 60 questions that examine learners' vocabulary and grammar. The test format is multiple choice. It is made up of two parts: The first part includes 40 items, and the second part includes 20 items. It took learners approximately 30 to 45 minutes to take this proficiency test, and only the students who completed the first part successfully did the second part. According to the European framework of language proficiency levels (Council of Europe, 2001), students who score between 24 and 30 out of the 40 questions of the first part of the OQPT or between 30 to 39 out of the overall 60 questions are at the lower intermediate level (Gentil & Meunier, 2018). This is the level that we needed for the present study.

In terms of reliability and validity, OQPT is widely used for specifying ESL and EFL learners' proficiency levels (See, Azkarai & Garcia Mayo, 2014; Barner et al., 2009; Rashidi & Mirsalari, 2017). The reliability and validity of the OQPT have been checked with approximately 60,000 students in 20 countries (Geranpaye, 2006). Results showed reliability coefficients of 0.9 and 0.85 for 60-item and 40-item tests, respectively. The reliability of the Oxford placement test for this study was calculated using Cronbach's alpha, which turned out to be 0.704, showing an acceptable level of reliability (Pallant, 2016).

Writing Topics

The focus of the present study was examining the effect of text types on morphological complexity. Three text types of narrative, expository, and

descriptive, were used. All questions were related to the topic of friendship. The topic of friendship was chosen to allow the participants to write on a familiar topic relatable to all age ranges.

1. The narrative topic consisted of sequential pictures presenting a scenario depicting some friends' school lives and events during a day. Some essential words were included in pictures. Students were asked to write a story about the pictures.
2. The descriptive writing topic asked learners to describe the general characteristics of their best friends, including appearance and personality.
3. The expository topic asked learners to write about the importance of friendship and the effect of good and bad friends in their lives.

Data Collection Procedure

In the present study, the data collection took approximately 16 weeks. Students participated in this study after their consent was obtained. They were assured that their writings and demographic information were confidential, and if they took part in all the phases of the study, they would be financially supported for their next semester by the lead researcher. After discussing the purpose and required proficiency level for the research, the managers of the language centers introduced their potential classes for this research.

Three phases were followed in this study. First, the Oxford Quick Placement test was administered as a standard test for measuring the participants' language proficiency. They took the test based on the lead researcher's instruction and instructions written on the top of the test. It was conducted at the beginning of their regular session classes in July 2020.

Second, writing topics were administered to students in three consecutive weeks. The participants were asked to write on the given topics

at least 120 words with a 20-30-minute time limit. The students wrote once a week for three weeks in their assigned text types. The order of text types was randomly assigned. The students were not allowed to consult a dictionary or seek others' support. After collecting the three writing text types from all the participants, only the papers of students who scored at the lower-intermediate level in the proficiency test were included for the analysis. That included 87 out of the total number of 127 students. In the Oxford Quick Placement test, students who score between 30 and 39 out of the overall 60 questions are at the lower- intermediate level (Gentil & Meunier, 2018). The reason for choosing the lower-intermediate level is the stagnation of MC after the intermediate level in L2 English (Brezina & Pallotti, 2019; De Clercq & Housen, 2019). According to these studies, L2 English learners use relatively the same amount of MC at the intermediate and advanced levels which were quite similar to the MC of native speakers on the same tasks, showing that morphological complexity development stagnates from the intermediate level onwards.

Thirdly, the writings were written initially on papers. They were transcribed verbatim, without any spelling or grammatical corrections in Microsoft word by the lead researcher. Descriptive statistics related to the length of compositions are presented below in Table 2.

Table 2. Descriptive Information of the Length of the Texts

	N	Minimum	Maximum	Mean	Std. Deviation
Number of words in the descriptive essays	87	109.00	263.00	140.95	28.56
Number of words in the narrative essays	87	101.00	257.00	131.10	27.53
Number of words in the expository essays	87	105.00	250.00	140.79	31.79

Next, the compositions were copied and pasted one by one in "computer

tool" (Brezina & Pallotti, 2019), which is developed for measuring MC known as MCI available at (http://corpora.lancs.ac.uk/vocab/analysemorph.php). The verbal and nominal inflectional complexity of texts was automatically calculated by MCI 10. There are two versions of MCI, the MCI 10 for texts containing at least 21 verbs and more as well as MCI 5 for the shorter texts. For this reason, participants were asked to write at least 120 words on each text type. Although some students produced shorter texts as shown in Table 2, their compositions contained the minimum required a number of verbs and nouns to run MCI 10. In this study, the mean number of verbs for descriptive, expository, and narrative compositions was 27.9, 28.87, and 27.93 respectively.

Research Design

The research design the researchers used in this study was post hoc. Post hoc designs, as Hatch and Lazaraton (1991) noted, are very good candidates to be used in research studies when researchers do not administer treatment to examine its effect, do not establish a causal relationship, or do not manipulate the independent variable to cause a change. In their words, such designs help researchers "to describe some data and see how the values vary across groups of subjects, across tasks, and so forth" (p. 100). The researchers in this study employed this research design to examine how morphological complexity varied across descriptive, expository, and argumentative text types.

Data Analysis

After quantifying the learners' written morphological complexity in the MCI online tool, the statistical package for social sciences (SPSS) was used for statistical analyses. The descriptive analysis provided frequencies, percentages, mean, and other descriptive information about the participants and writing scores. Kolmogorov Smirnov was used for the normal

distribution of data. Friedman Test and Wilcoxon Signed Rank Test were used for analyzing the morphological complexity of the given text types.

RESULTS

Verbal Morphological Markers

To answer the first research question (Are there any significant differences in the effects of narrative, descriptive, and expository text types on Iranian lower-intermediate L2 learners' verbal inflectional diversity?), we used the following statistical procedures. The frequency of verbal inflectional forms was manually calculated for each composition. For this aim, compositions were analyzed for twelve verb inflectional exponents derived from the classification given by Katamba (2006). The verbal inflections included the following markers: (a) tense markers, entailing *-ed* and stem modification of verbs (irregular forms) indicating past tense; *-s* morpheme indicating the third person, singular, present tense; (b) aspect markers, including imperfective aspect showing progressive actions by the morpheme *-ing*, and perfective aspect showing completed actions by the specific auxiliaries, e.g. *had + past participle*; (c) mood markers indicative of the probability, necessity, desirability, and permission of actions by the use of auxiliary modal verbs like *can*, *must*, *ought to*, and *may*; (d) agreement markers to person and number like the inflection of verb '*to be*' illustrating full agreement with the person (e.g., *I am*, *he/she/it is* and *you/they are*); and (e) auxiliary verbs like *do, does, to be, have, has,* and *had* which were referred to as configurational features of verbs by Ktamba (2006). Descriptive statistics of these markers, including mean and standard deviation are displayed in Table 3.

Table 3. Mean Scores of Verbal Morphological Exponents

Morphological markers	Descriptive	Narrative	Expository
	Mean (SD)	Mean (SD)	Mean (SD)
Ed	1.19 (1.92)	4.49 (2.82)	1.41 (1.94)
S	1.68 (1.96)	.64 (1.46)	.89 (1.43)
Ing	1.51 (1.55)	1.97 (2.00)	1.63 (1.98)
Bare infinitive	11.90 (4.6)	8.98 (4.84)	15.01 (5.06)
Irregular	1.01 (1.58)	3.93 (2.19)	.77 (1.11)
Was/were	.79 (1.94)	4.39 (2.91)	.66 (1.16)
Am/is/are	7.94 (3.40)	2.04 (1.95)	4.51 (2.81)
Have/has	.09 (.32)	.12 (.36)	.24 (.58)
Had	.03 (.23)	.11 (.51)	.02 (.15)
Do/does	.58 (1.10)	.28 (.66)	.71 (1.14)
Did	.03 (.18)	.47 (.64)	.06 (.33)
Modals	1.05 (1.15)	.45 (.80)	2.83 (2.13)
Total number of verbs	27.90 (6.92)	27.93 (5.91)	28.87 (7.56)

Note. N = 87

As shown in Table 3, the number of verbs on average is almost the same across the given text types. The following paragraphs are statistical analyses of the given 12 exponents across the provided text types to shed light on the statistically significant verbal inflections.

To calculate the MC of a text, MCI considers the variety of exponents without providing any information about the types and frequency of the exponents. Prior to running MCI, it is necessary not only to investigate the number of morphological markers used in the calculation of MC for each text but also to identify statistically different types of morphological exponents across the provided text types because this makes the results of MCI more meaningful. For this purpose, a series of Friedman Tests were conducted to evaluate the difference in the frequency of each inflectional form and the total number of verbs in the narrative, descriptive, and expository compositions. The non-parametric Friedman Test was chosen due to the non-normal distribution of inflectional forms assessed by running several Kolmogorov-Smirnov Tests ($p < 0.05$).

The results of Friedman Tests indicated that there was a statistically

significant difference in the frequency of 9 out of 12 morphological markers across three text types of expository, narrative, and descriptive, including -*ed* ($x_f^2(2) = 70.79$, $p < .05$, $w = .40$), -*s* ($x_f^2(2) = 22.39$, $p < .05$, $w = .12$), bare infinitive ($x_f^2(2) = 51.09$, $p < .05$, $w = .29$), irregular forms ($x_f^2(2) = 104.89$, $p < .05$, $w = .60$), *was/were* ($x_f^2(2) = 95.10$, $p < .05$, $w = .54$), *am/is/are* ($x_f^2(2) = 106.79$, $p < .05$, $w = .61$), *do* and *does* ($x_f^2(2) = 8.87$, $p < .05$, $w = .05$), *did* ($x_f^2(2) = 47.40$, $p < .05$, $w = .27$), and modals ($x_f^2(2) = 57.36$, $p < .05$, $w = .33$). The three exceptions were inflectional forms: -*ing*, auxiliary verbs: *have, has, had*, and total number of verbs ($p > .05$).

Post-hoc tests using an array of Wilcoxon Signed Rank Tests with a Bonferroni-adjusted alpha level of .016 (.05/3) were conducted to specify where the differences were. Firstly, the frequency of -*ed* in narrative texts (*Md* = 4) was higher than the frequency of -*ed* in descriptive *(Md* = .00) and expository (*Md* = 1) text types, and this was statistically significant, $z = -6.63$, $p = .00$ with a large effect size ($r = .5$), and $z = -6.43$, $p = .00$ with an almost large effect size ($r = .48$), respectively (Cohen, 1988, as cited in Pallant, 2016). However, the difference in the frequency of -*ed* in descriptive and expository texts was found to be insignificant ($p > .016$).

Secondly, the frequency of -*s* in descriptive texts (*Md* = 1) was higher than the frequency of -*s* in both narrative (*Md* = .00) and expository (*Md* = .00) text types, and this difference was statistically significant, $z = -4.26$, $p = .00$ with a medium effect size ($r = .3$) and $Z = -3.78$, $p = .00$ with a small effect size ($r = .28$), respectively (Cohen, 1988, as cited in Pallant, 2016). However, the difference in the frequency of -*s* in narrative and expository texts was found to be statistically insignificant ($p > .016$).

Thirdly, another Wilcoxon Signed Rank Test revealed a statistically significant higher number of bare infinitives in expository (*Md* = 14) than narrative (*Md* = 8) and descriptive text types (*Md* = 11), $z = -6.49$, $p = .00$, with an almost large effect size ($r = .49$), and $z = -4.23$, $p = .00$, with a medium effect size ($r = .32$), respectively. Likewise, the Wilcoxon Signed Rank Test indicated a larger number of bare infinitives in descriptive (*Md* =

11) than narrative (*Md* = 8) text types, z = -4.04, *p* = 0.00 with a medium effect size (*r* = .3) (Cohen, 1988, as cited in Pallant, 2016).

Fourthly, another Wilcoxon Signed Rank Test demonstrated a statistically higher number of irregular forms in narrative (*Md* = 4) than expository (*Md* = .00) and descriptive (*Md* = 1) compositions, *z* = -7.19, p = .00, with a large effect size (*r* = .54) and *z* = -7.11, *p* = .00, with a large effect size (*r* = .53), respectively (Cohen, 1988, as cited in Pallant, 2016). However, the difference in the number of irregular forms in descriptive and expository text types was not statistically significant (*p* > .016).

The fifth Wilcoxon Signed Rank Test was demonstrative of a statistically significant higher number of *was* and *were* in narrative (*Md* = 4) than expository (*Md* = .00) and descriptive (*Md* = .00) compositions, *z* = -7.45, p = .00, with a large effect size (*r* = .56) and *z* = -6.64, *p* = 0.00, with a large effect size (*r* = .5), respectively (Cohen, 1988, as cited in Pallant, 2016). No significant difference in the frequency of *was and were* was found between expository and descriptive text types (*p* > .016), though. Similarly, the next Wilcoxon Signed Rank Test indicated a statistically significant larger number of *did* in narrative (*Md* = .00) than expository (*Md* = .00) and descriptive (*Md* = .00) text types, *z* = -4.18, *p* = 0.00, with a medium effect size (r = .31), and z = -5.0, p = .00, with a medium effect size (*r* = .37), respectively (Cohen, 1988, as cited in Pallant, 2016). The difference in the number of *did* in expository (*Md* = .00) and descriptive (*Md* = .00) writings was not statistically significant (p > .016).

Additionally, a Wilcoxon Signed Rank Test indicated a statistically significant greater frequency of *am/is/are* in descriptive (*Md* = 8) than narrative (*Md* = 2) and expository (*Md* = 4) writings, *z* = -7.77, *p* = .00 with a large effect size (*r* = .58), and *z* = -6.58, *p* = .00, with an almost large effect size (*r* = .49), respectively. It is also worth noting that the number of *am/is/are* was found to be statistically greater in expository (*Md* = 4) than narrative (*Md* = 2) compositions, *z* = -5.93, *p* = .00 with a medium effect size (*r* = .4).

Finally, the last Wilcoxon Signed Rank Test was indicative of a

statistically significant larger number of modals in expository (*Md* = 3) compositions in comparison to narrative (*Md* = .00) and descriptive ones (*Md* = 1), *z* = -6.72, *p* = .00, with a large effect size (*r* = .5), and *z* = -5.62, *p* = .00, with a medium effect size (*r* = .4), respectively. Furthermore, the Wilcoxon Signed Rank Test also showed that the number of modals was significantly larger in descriptive (*Md* = 1) writings comparing with narrative (*Md* = .00) text types, *z* = -3.57, *p* = .00, with a small effect size (*r* = .2).

Nominal Morphological Markers

To answer the second research question (Are there any significant differences in the effects of narrative, descriptive, and expository text types on Iranian lower intermediate L2 learners' nominal inflectional diversity?), the researchers drew on the following statistical tests and procedures.

English nominal inflectional forms include: (a) number markers including the exponents: -*s*, and -*es*, as well as irregular forms like *women*; and (b) the genitive marker – *'s* indicating possession (Haspelmath & Slims, 2013). Descriptive statistics of nominal inflectional markers, including mean and standard deviation are displayed in Table 4.

Table 4. Mean Scores of Nominal Morphological Exponents

Morphological markers	Descriptive Mean (SD)	Narrative Mean (SD)	Expository Mean (SD)
Plural -s/-es	3.79 (2.76)	3.71 (2.36)	5.02 (3.49)
Irregular plural form	.16 (.39)	.27 (.54)	.12 (.33)
Possessive – 's	.13 (.50)	.25 (.63)	.13 (.40)
Basic form	24.18 (8.10)	24.35 (8.27)	28.42 (10.41)
Total number of nouns	28.7 (9.37)	28.51 (7.89)	33.71 (10.8)

Note. N = 87

As shown in Table 4, the total number of nouns in expository essays (Mean = 33.71) is more than descriptive (Mean = 28.7) and narrative essays (Mean

= 28.51). Likewise, the mean number of the basic form of nouns and plural markers -*s* and -*es* is shown to be higher in expository texts than in narrative and descriptive essays. To find if these differences were statistically significant, a number of Friedman Tests were run. Friedman test was conducted to mark differences due to the non-normal distribution of nominal morphological markers across the given text types.

The results of Friedman Tests indicated that there was a statistically significant difference in the total number of nouns ($x_f^2(2) = 12.01$, *p* < .05, w = .069) and frequency of plural markers -*s* and -*es* ($x_f^2(2) = 10.84$, *p* < .05, w = .062) across three text types of expository, narrative and descriptive. However, there were no statistically significant differences in the frequency of the basic form of nouns, the genitive –'s, and plural irregular forms across the given text types (*p* > .05).

A Wilcoxon Signed Rank Tests with Bonferroni adjusted alpha as the post-hoc test indicated a statistically significant higher number of nouns in expository (*Md* = 31) than in narrative (*Md* = 28) and descriptive text types (*Md* = 26), *z* = -3.79, *p* = .00, with a small effect size (*r* = .2), and z = -4.69, *p* = .00, with a medium effect size (*r* = .3), respectively (Cohen, 1988, as cited in Pallant, 2016). However, the difference in the frequency of nouns in descriptive and narrative texts was found to be insignificant (*p* > .016).

Another Wilcoxon signed rank test illustrated a statistically larger number of the plural markers -*s* and -*es* in expository essays (Md = 4) than in narrative (*Md* = 3) and descriptive ones (*Md* = 3), *z* = -2.9, *p* = .004, with a relatively small effect size (*r* = .2), and z = -3.21, p = .001, with an almost small effect size (*r* = .24), respectively. There was no statistically significant difference in the number of plural marker -*s* and -*es* in descriptive and narrative text types.

Morphological Complexity

In the current study, the effect of three text types on morphological complexity was investigated. Each composition written by 87 Iranian

learners of L2 English at the lower-intermediate level was given to the MCI available at (http://corpora.lancs.ac.uk/vocab/analysemorph.php) (Brezina & Pallotti, 2019) for morphological complexity analysis. Inflectional diversity of verbs and nouns was separately calculated for each composition. The descriptive statistics, including minimum and maximum scores, the means, and standard deviations of the MCI scores across the three given text types are provided in Table 5.

Table 5. Descriptive Statistics of MCI Scores of Verbs and Nouns across the Text Types

	N	Minimum	Maximum	Mean (SD)
MCI of verbs in descriptive essays	87	1.00	8.84	4.40 (1.54)
MCI of verbs in narrative essays	87	2.39	10.64	6.24 (1.80)
MCI of verbs in expository essays	87	.77	7.75	3.79 (1.41)
MCI of nouns in descriptive essays	87	.00	1.95	.95 (.40)
MCI of nouns in narrative essays	87	.00	3.00	.97 (.50)
MCI of nouns in expository essays	87	.00	1.91	.94 (.39)

According to Table 5, the highest mean of the morphological complexity of verbs belongs to the narrative texts (Mean = 6.24), whereas the least verbal inflections were found in the expository text type (Mean = 3.79). The mean MCI scores of the nouns, however, were almost the same, approximately .9 with slight differences.

A series of Kolmogorov-Smirnov tests revealed that the inflectional diversity of verbs was not distributed normally, $D(87) = .11$, $p = .005$, $D(87) = .09$, $p = .03$, and $D(87) = .09$, $p = .04$ across narrative, expository and descriptive text types, respectively. Likewise, for the inflectional diversity of nouns, the Kolmogorov-Smirnov tests were demonstrative of a significant departure from normality, $D(87) = .31$, $p = .00$, $D(87) = .30$, $p = .00$ and $D(87) = .31$, $p = .00$ in descriptive, narrative, and expository compositions,

respectively. Thus, due to the non-normal nature of the distribution, Friedman Test was conducted to confirm whether there is a significant difference between the verbal and nominal inflections across the given text types.

The results of the Friedman Test showed that there was a significant difference in verbal inflectional diversity across three text types of narrative, expository and descriptive, $x_f^2(2) = 73.26$, $p < .05$, $w = .42$. Post-hoc tests using a Wilcoxon Signed Rank Test with a Bonferroni-adjusted alpha level of .016 (.05/3) illustrated that the inflectional diversity of verbs in narrative compositions ($Md = 5.86$) was higher than the inflectional diversity of verbs in descriptive ones ($Md = 4.36$). This difference was statistically significant, $z = -6.24$, $p = .00$, with a medium effect size ($r = .47$). Similarly, the Wilcoxon Signed Rank Test indicated that the inflectional diversity of verbs was higher in narrative compositions ($Md = 5.86$) in comparison to expository writings ($Md = 3.62$); this higher diversity was also statistically significant, $z = -7.34$, $p = .00$, with a large effect size ($r = .55$). Furthermore, another Wilcoxon Signed Rank Test was illustrative of a higher inflectional diversity of verbs in descriptive than expository text types. The difference was statistically significant, $z = -2.52$, $p = .01$; however, with a small effect size ($r = .19$). The three text types exhibited a statistically different degree of verbal inflections. On the one hand, the verb MCI of narrative essays was higher than the descriptive and expository essays, and on the other hand, the verb MCI of the descriptive compositions was greater than expository ones.

Finally, the results of a Friedman Test showed that there was no statistically significant difference in the inflectional diversity of nouns across narrative, descriptive, and expository compositions, $x_f^2(2) = 3.23$, $p > .05$.

DISCUSSION

Morphological Complexity

The ultimate goal of the present study was to determine if morphological

complexity, specifically inflectional diversity of verbs and nouns, was different across narrative, expository, and descriptive text types. In the first place, there was a statistically significant difference in the number of 9 out of 12 verbal exponents across the provided text types; on the other hand, the analysis of the nominal morphological markers was illustrative of a statistically significant difference in only one nominal exponent with a small effect size across the given text types. In the second place, the statistically significant variety of verbal morphological markers for each text type resulted in the different verbal inflectional diversity in the given text types. In other words, Iranian L2 lower-intermediate English learners exhibited significantly greater verb morphological complexity in the narrative compositions when compared with descriptive and expository text types. However, the nominal morphological complexity was the same across the provided text types. In this section, illustrations of these markers across the three text types and explanations for the differences are provided.

Verbal Morphological Diversity across Text Types

Previous studies have indicated that the degree of the MC of texts is connected to the L2 learners' proficiency (Bulte & Roothooft, 2020; De Clercq & Housen, 2019; Ehret & Szmrecsanyi, 2019; van der Slik et al., 2019). This study adds another factor: The level of verbal MC in L2 English writings can be a function of the provided text types. Starting with narrative compositions, they were morphologically more complex than descriptive and expository compositions. Comparing the frequency of the morphological markers revealed that higher verbal MCI in narratives is due to the higher use of -ed, irregular forms, and was and were as derivations of the verb to be with a pretty large effect size for all. The participants rarely used these forms to approach descriptive and expository writing questions. This suggests that L2 student writers in this study relied more on past tense to write on the narrative picture prompt. Primarily, this result supports that of De Clercq and Housen (2019), in which the verbal MCI of English

native speakers was significantly higher than that of lower-level English learners due to the more frequent uses of past forms, specifically irregular forms. The excerpts below indicate the use of morphological markers in the narrative, descriptive, and expository text types in bold type. Excerpt from learner 7's narrative composition shows more frequent uses of different morphological exponents in narrative texts (*was*, *-ing*, *irregular form*, *bare infinitive*, *is*) in comparison to descriptive (*is*, *-s*, *bare infinitive*, *do*) and expository (*bare infinitive*, *have*, *irregular*, *are*) text types.

Excerpt from learner 7's descriptive composition:

> *My best friend **is** my husband. He **loves** me more then everyone. I love him too. We **try** to raise our children. We **try** to better life. We never **lie** to each other. We **try** to **help** us in life. We **support** each other. We **take** care each other when we **get** sick. We **are** best friend for us. We **don't have** a close friend.*

Excerpt from learner 7's narrative composition:

> *I and my classmate **was eatting** Lunch. floor was slippery. Mary **was comming**. She **fell** down. she **was** embarrassed. I and my friends **joined** us and **help** to her. She **was** grateful with us. We **ate** lunch with us. We **had** a good sense because we **help** to a person that she embarrassed. our life **is** full of good things if we **see** well and we **do** on time.*

Excerpt from learner 7's expository composition:

> *I **think** friendship **is** necessary need in life. I **have** many friends but they **haven't been** close friend. I **have** belief that he or she **is** my friend because **needs** me. In our culture, friendship **is** holy but in recent years, people **are** not loyal. They **have** a goal from friendship unfortunately.*

These results can be explained in two ways. First, it has to do with

the nature of the text types as writing narratives somehow impel writers to write in the past tense while descriptive and expository modes compel them to describe scenes and discuss points in the present time (Salaberry, 2000; Warrican, 2005). Since a large part of the morphological complexity of English relies on the use of past tense markers (De Clerq & Housen, 2019), specifically *-ed* morpheme or stem modifications for creating irregular forms as well as the inflection of the verb '*to be'* including *was* and *were* (Bulte, 2013), it can be argued that narrative texts are morphologically more complex in L2 English. Second, the findings can be accounted for by what Pallotti (2015) calls "stylistic complexity" (p .4), which refers to the fact that the complexity of performance partly depends on the writers' linguistic choices. In other words, it does not necessarily mean that L2 learners cannot use more complex structures, but it has to do with their preferences when they answer a question.

Nominal Morphological Diversity across Text Types

This study also attempted to investigate the diversity of noun inflections across the three text types as well as the extent to which it affects the overall MC of student performance. Initially, despite the slightly different frequency values of nouns, plural markers, irregular plural forms as well as *-'s* in the provided text types, the nominal inflectional diversity was found to be low, on average around 0.9 and similar across the three text types of expository, descriptive, and narrative. These findings confirm the fact that English possesses a simple inflectional system specifically in the nominal domain (Konig, 2002). In English, nouns are only inflected for plurality and possession, and other attributes like word order determine the function of nouns (van der Slik et al., 2019). Generally, a high and diverse noun MCI cannot be expected in the nominal system of English with only two nominal morphological exponents, since MCI is associated with the diversity of inflectional forms. In other words, the more morphological forms a language possesses, the more forms will be used in the texts, and there will

be more diverse MCI scores.

The insignificant noun MCI across the text types can be due to the effect of confounding factors like level of proficiency, topic, and stylistic choices. Firstly, previous studies (e.g., Bulte & Roothooft, 2020) concluded that MC ceases to develop at the intermediate level. This might not be the case for the noun MCI. The equal and low noun MCI across the given text types might be due to the participants' lower intermediate level. Secondly, the topic affects the morphological complexity of writing (Yoon, 2017). Children, women, and men were the only irregular plural forms in the given text types. The topic of all the text types was related to friendship. This topic does not necessarily require the use of various irregular plural nouns except the ones used by the participants. Thirdly, regarding the possessive form, the stylistic choices might have an effect. It was expected to have higher -*'s* in the descriptive writing where students were asked to describe their best friends. However, they made use of adjective pronouns to refer to their best friend's attributes, instead of -*'s*. This exponent was more frequently used in the narrative compositions; however, it was restricted to structures like kid's dishes and girl's clothes.

CONCLUSION AND IMPLICATIONS

This study revealed that the given text types do not affect the nominal morphological complexity as it was low and almost the same across the narrative, expository and descriptive compositions. However, the findings were illustrative of the impact of the given text types on verbal morphological complexity. Verb inflectional diversity of narrative compositions was higher than that of descriptive and expository ones. Moreover, descriptive writing was shown to be morphologically more complex than expository writing.

The findings of the current study suggest that morphological complexity may be evaluated differently if the writing questions represent different text types. It is concluded that Iranian L2 English learners at

lower-intermediate level tend to write morphologically more complex when writing on picture prompts resulting in narrative text types. Therefore, text type may be considered a factor leading to differential levels of morphological complexity, in addition to proficiency level (Ehret & Szmrecsanyi, 2019), language under investigation (De Clercq & Housen, 2019), and first language (van der Slik et al., 2019). Such a conclusion implies that verbal diversity of morphological complexity seems to be more amenable to change when text types differ; while nominal morphological diversity seems to be the same across the given text types. In conclusion, the current study provides evidence that morphological complexity in written essays is partially affected by text types.

The findings of the current study suggest that studies on morphological complexity should control the effect of text types. Previous studies have highlighted the use of morphological complexity for purposes like marking developmental stages of morphemes, or examining L2 learner's proficiency (Vespoor et al., 2012); the current study highly proposes considering the effect of text types when evaluating morphological complexity for such goals. For research in morphological complexity, researchers would be advised to use text types that force writers to make the maximum use of their morphological resources; narrative writing appears to be more suitable in this regard. Likewise, the results can raise teachers' awareness, for they can make use of specific text types to assess L2 learners' morphological resources. For example, narrative text types appear to be more useful, and expository text types appear to be less useful on this subject. Teachers should not draw conclusions about students' performance based on one individual text type.

The following limitations need to be taken into account in the present study. The number of participants is one of the major limitations of this study. Since this study was conducted amid the Coronavirus pandemic, the number of students in language classes was fewer than the normal situation. For this reason, data were collected from several language institutes which made the process of data collection time consuming and

very challenging. Another limitation was the number of text types. Only three specific text types of narrative, descriptive, and expository, were used. As participants' level of proficiency was lower intermediate, these text types were more manageable for them to write at least 120 words.

Given the limitations of the present study, some suggestions for further research are made. First, researchers in the future may consider analyzing gendered performance across different text types to find if being male or female makes any difference in morphologically complex text types. Gender was kept constant in the present study, so it can make up a good point of departure for future studies in morphological complexity. Second, morphological complexity is not limited to just inflectional forms; it also includes derivational components. Due to time constraints, we only focused on the inflectional aspect, so the results are more likely to change when derivations are also considered. Third, morphological complexity lends itself readily to quantitative analyses, which suggests it is primarily frequency checking of morphological markers. However, as one of the reviewers suggested, textual analysis of extracts in text types helps researchers to provide more accurate, thicker results, an issue to be taken by researchers in the future. Finally, topic familiarity, degree of reasoning of tasks, and cognitive load of prompts are factors that may affect morphological markers, resulting in morphological density, diversity, and complexity. The researchers in this study only used the topics which language learners used in their conversation classes, so the analysis of those three factors may prove promising in helping researchers to understand the morphological complexity.

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