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## Iranian EFL Learners' Perceptions about Automatic Spelling Correction Software Use for Learning English Spellings: A Study with Focus on Gender

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### ABSTRACT

The aim of the current study was investigating EFL learners' perceptions of using automatic spelling correction software for learning English spelling among male and female EFL learners. 91 university students (female=42, male=49) of three General English (GE) courses participated in the study. The participants were asked to complete the measure of automatic spelling correction software use perceptions that assessed their perceptions with respect to (a) awareness of how the software functions and corrects the spelling mistakes, (b) the educational value of the software for learning English spelling, (c) learners' dependence on the software in learning and checking English spelling, and (d) the way software is helpful in improving English spelling. The result of descriptive statistics showed that male students' mean values on all four components were higher than those of female students meaning that male students were more aware of how the software works, had more positive perceptions of the educational value of the software, were more dependent on the software in learning/checking English spelling, and hold more positive perceptions of the role of the software in improving their English spelling. The result of multivariate analysis of variance (MANOVA) supported a significant difference between two groups' general perceptions of automatic spelling correction software use. Further analysis showed that the only significant difference between male and female participants was related to their awareness of how the software functions; indicating that male students were more aware of the way the software works and corrects spelling mistakes.

**Keywords:** Automatic Correction Software, Spelling, Perceptions, General English, Gender

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### 1. Introduction

With the expansion of technology infrastructures and rapid increase in the rate of use of mobile devices, the use of new technologies and their applications among users of different walks of life has accelerated over the past decade. These technologies are more dominantly used by younger generation as they are under the pressure of doing various tasks as rapidly and efficiently as possible for professional and personal reasons. As a result, the industry of developing software programs and applications with different functions is booming and many new programs are being developed on a daily basis. Using these applications helps the promotion of social

communication among people in the cyberspace and facilitates the process of doing different types of projects in business or academia.

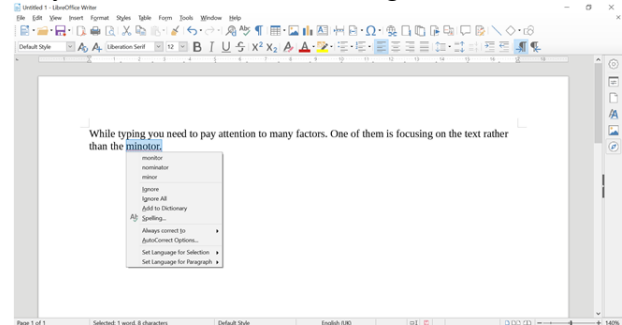
Using new technologies requires certain types of skills for successful interaction with the virtual environment and its users. Literature supports a variety of skills users need to be able to respond to the challenges of how to use technological tools such as inserting the data into the device, manipulating the information, saving the changes, and transferring the information into other formats or to other devices. The very basic skill for working with technological devices is entering the data into the device by typing the words fast and

correctly. This is essentially important while using cellphone applications as failure to enter information correctly can interfere with the installation or running processes of the programs. In the same way, the insertion of misspelled words while searching the Internet may result in inappropriate data entry and thus coming up with irrelevant information and waste of time due to repeated and unrelated searches. Similarly, while interacting with other people in virtual environments, the entry of incorrect information with spelling, grammatical and semantic errors may cause vague and impolite messages, and even create misunderstanding in interpersonal, group, or professional communication.

The way information is inserted into the system has been a key issue since the 80's when personal computers became prevalent. The aim of the development of word processors was helping people type the words rapidly by minimizing the number of errors and misspellings in the documents. To do this, spellcheckers with different capabilities and functions were designed and predicted in the environment of word processors. These spellcheckers -that are basically used on desktop computers- detect misspellings and suggest the correct form of the words and thus speed up users' interaction with the system and guarantee -albeit to some extent -faster writing and typing. However, when this software is used on smartphones, it has the capability of automatic word correction and prediction (Wood, 2014) as well, that is when the user types a word, the software checks the spelling of the word with its dictionary (internal database) and inserts its own suggested word. If the typed word does not match any words in the database of the software, it will automatically (even before typing the full form of the word) insert a word based on collocations or frequently used words by the user. This feature is known as auto-correction and the application is known as automatic spelling correction software or simply autocorrect software.

The main challenge of using autocorrect software programs, as compared to spellcheckers of the word processors, is changing the words without users' consent or attention. When an incorrect word is inserted into the environment of the word processors and the misspelled item is recognized by the program, it draws the attention of the user to the mistake and suggests a list of correct words, and ultimately it is the user who decides about

the correct form of the word. However, when users are using the autocorrect software, they are generally unaware of the changes that are automatically made to the word, and in many cases, after receiving the search result or feedback from other people, they notice their mistakes (Figure: 1).



a) LibreOffice Writer's spellchecker



b) Smartphone autocorrect software

*Figure 1: Error recognition by (a) a spellchecker and (b) automatic spelling correction software*

Due to the high speed of searching information or exchanging messages in the virtual world, many users are now totally dependent on automatic spelling correction software programs and prefer to keep this feature active on their cellphones although a high rate of mistakes has been reported for these types of applications. Research shows that excessive dependence on automatic spelling correction programs may affect people's linguistic abilities (Baron, 2009) and cause a kind of negligence about writing process especially among young users. This may ultimately lead to the emergence of a generation of illiterates (Sorrentino, 2008). The way information is entered into technological tools, such as text messaging, has enabled users to write the content at a very high speed and they thus do not need to go through the writing process (planning, drafting, revising, editing) (Ross, 2007). It is believed that the need to develop literacy (reading and writing) and its related skills are a reflection of the role and the value of



written culture in any community (Leki, Cumming, & Silvia, 2008) and if the written heritage is ignored in a society, informal, false, and rude language structures prevail in various social groups and thus the cultural values of the society are damaged. Therefore, serious attention to the way using technological tools impact the nation's literacy is of vital importance.

Research on computer-assisted language learning supports the use of technology in teaching literacy and especially in teaching writing. The role of collaborative writing via wikis, blogs, and digital stories in improving language learners' writing skills in the cycle of writing process instruction is evident (Rahimi & Miri, 2015). Some studies have also emphasized the role of using certain types of technologies in the phases of writing process. Early studies on using word processors in writing instruction were done to clarify the role of this technology in the development of writing skill and students' attitudes towards writing (Littlefield, 1983). It was shown that using word processors in writing classes can boost writers' motivation and increase the quality and the quantity of the written material (Nichols, 1996). Some studies focused on the way this technology is used by teachers and students in writing instruction. It was found that word processors are basically used individually with limited teacher intervention and that word processors are mainly used for preparing presentations (Mumtaz & Hammond, 2002). The effectiveness of word processors in writing instruction in English as a foreign language setting is also documented (Yilmaz & Erkol, 2015; Abdelrahman, 2013). Similarly, the impact of using computers on language learners' enhancement of spelling skills has been examined and using word processors to help learners master writing mechanisms and speed up writing is recommended (Mehrpour & Ghayour, 2017).

In this framework, one line of research suggests that when working with word processors and entering information into a computer, proper use of the keyboard is important and can influence the formation of the message and the speed and the accuracy of the writing. To make a better use of word processor's capabilities in the process of writing in the environment of a computer or cellphone, people need to be taught the proper use of keyboard (physical and virtual) so that the keyboard does not act as

an interfering agent in the process of writing (Beck & Fetherston, 2003). It is suggested that the proper use of keyboard can increase the power of thinking and the brain processing so that the user does not see the keyboard as a foreign tool but as a part of the thinking process (Hayles, 2012).

In spite of these findings, some language educationists hold strong position against overuse of autocorrect software of cellphones due to automatic correction function of the program. Mixed findings on advantages and disadvantages of autocorrect use among L1 and L2 communities are documented though. In a pioneering study on the use of autocorrect software among university students, Sheehan reported that using the software and over-trusting it would lead to the degradation of cognitive abilities and intrinsic skills of spelling words due to the false self-confidence (Sheehan, 2009). In another study, the spelling ability of English words among 2000 adults was examined. The result showed that only 20% of the participants in the word spelling test got a perfect score, while the students got the worst performance among different age groups. The result was attributed to the excessive use of autocorrect smartphone software by younger participants (Clark, 2013).

The use of autocorrect software has been investigated among students with dyslexia (reading disorder) and it has been suggested that autocorrect program -in comparison to word processors- improves the working memory capacity, the retention of the content, writing skills and confidence in writing assignments (Hiscox, Leonavičiūtė, & Humby, 2014). However, among normal learners it is found that the excessive use of technology in English language writing, especially spellcheckers and autocorrect software could lead to the loss of text editing skills; because the speed required in virtual communication encourages users to type fast and be inattentive to their mistakes (Alhusban, 2016). It is also reported that students' use of spell and grammar checkers in the word processors saves the time and the energy in preparing the assignments but at the same time, it can lead to energy decline and perseverance in the completion of the assignments. The reason for this is that the students get used to shortcuts in writing assignments and are hindered from a deep analysis of the writing phases from

conceiving the ideas to developing the concept (Bronowicki, 2014).

In a study specifically designed for children, an innovative method of using colored feedback in autocorrect software was compared with normal autocorrect software in the process of learning new vocabulary and spelling. The results showed that the use of color in the program can significantly increase the learning of new words. It was also found that the use of ordinary autocorrect software affected vocabulary learning and spelling of words, and contrary to the views of others, it was not an obstacle to the learning of vocabulary (Arif, Sylla, & Mazalek, 2016). Further, investigating the relationship between text-messaging by activating autocorrect software and bilingual (English/Spanish) teens' literacy showed that those participants who used the software to write SMS messages in both languages showed a strong dependence on the program. The results also revealed that text-messaging in the second language (English) and the choice of English as the language of the phone setting (to enter the data and adjust the settings) have a significant impact on the enhancement of users' academic skills. The result also showed that limited number of lexical items was used in English text messages (McSweeney, 2017).

As reviewing the literature shows the number of studies done on autocorrect software use among foreign language learners is very limited. Further, mixed findings have been reported about the educational value of autocorrect software in different learning contexts (i.e., first language, second language and foreign language settings) and with different types of participants (e.g., adults and kids). Moreover, the use of autocorrect software among male and female language learners is ignored in the literature while gender is one of the key issues in technology acceptance and use. Therefore, the current study aims to investigate automatic spelling correction software use perceptions of EFL learners by considering their gender. The main research question of this study is:

Is there any significant difference between male and female students' perceptions of automatic spelling correction software use for learning English as a foreign language?

## 2. Methodology

### 2.1. Participants

Ninety-one university students participated in the study. The sample

included 42 female and 49 male freshmen who had enrolled in three general English courses in a state university in Tehran. The textbook and the syllabus of the general English courses were the same. The goals of the syllabus of general English course include teaching reading comprehension, reading strategies, vocabulary, and study skills.

### 2.2. The Data Collection Instrument

Automatic spelling correction software use scale was used to assess students' perceptions of using autocorrect software in learning English as a foreign language. The scale has 13 items that assess students' use of autocorrect software on their technological devices with respect to the following four factors:

1. awareness of how the software functions and corrects the spelling mistakes (4 items),
2. the educational value of the software for learning English spelling (2 items),
3. learners' dependence on the software in learning and checking English spelling (5 items),
4. the way software is helpful in improving English spelling (2 items).

The measure is anchored on a 5-Likert scale from 1 (strongly disagree) to 5 (strongly agree). The reliability of the scale in this study was estimated to be .72.

## 3. Results and Findings

### 3.1. Descriptive Statistics

The descriptive statistics of the scale and its four components are reported in Table 1.

Table 1: Descriptive statistics of the variables

| Variables                                  | Male  |       | Female |       | Total |       |
|--|-------|-------|--------|-------|-------|-------|
|  | Mean  | SD    | Mean   | SD    | Mean  | SD    |
| Awareness of how AC* software functions    | 4.122 | 0.872 | 3.589  | 1.106 | 3.876 | 1.017 |
| Educational value of AC software           | 4.122 | 0.898 | 3.654  | 1.123 | 3.906 | 1.029 |
| Users' dependence on AC software           | 3.061 | 0.631 | 2.876  | 0.635 | 2.975 | 0.636 |
| The way AC software helps English spelling | 3.622 | 1.063 | 3.452  | 1.141 | 3.544 | 1.097 |
| AC software use scale                      | 3.637 | 0.505 | 3.304  | 0.602 | 3.483 | 0.574 |

\* Autocorrect

As Table 1 shows, the mean score of automatic spelling correction software use scale shows that the sample's perceptions of software use for learning English is roughly positive (mean=3.483, SD=.574). Comparing the means of male and female students on the scale, however, shows that the mean of male students is marginally higher than (man=3.637, SD=.505) that of female students (mean=3.483, SD=.574) indicating that male students' autocorrect software use perceptions for learning



English are more positive than female students.

Further, when the total sample is considered, the highest mean values are related to components number 1 and 2, that is awareness of how the software functions (mean=3.876, SD=1.017) and its educational value (mean=3.906, SD=1.029). This implies that in general EFL learners are roughly aware of the way autocorrect software functions and they know how to use this application for learning English. This also holds true while both male and female participants are taken into consideration as both male and female students' means on components 1 and 2 are higher than other two components. However, what is noteworthy is higher values of the means of both components among male students. In other words, male students are more aware of the way autocorrect software functions and its educational value in learning English spelling.

The lowest value, while the total sample is considered, is related to component number 2, users' dependence on autocorrect software (mean=2.975, SD=.636). This shows that the participants were not very dependent on the software and they typed English words even if the autocorrect software was not active or available. This also holds true when male and female participants are considered. Lower value of female students' mean on this component shows that female students are less dependent on autocorrect software in comparison to male students.

### 3.2. Perceptions of automatic spelling correction software use across gender

In order to compare male and female students' perceptions of autocorrect software use, a one-way multivariate analysis of variance (MANOVA) was conducted in which four factors of automatic spelling correction software use scale served as the dependent variables and students' gender (2 levels: male and female) was the independent variable. Preliminary assumption testing was conducted to check for normality, linearity, and univariate and multivariate outliers. Homogeneity of variance-covariance matrices was assessed by Box's M Test of Equality of Covariance Matrices (Box's  $M=15.306$ ;  $F=1.456$ ;  $p=.149>.001$ ) implying that the observed covariance matrices of the dependent variables were equal across groups. Levene's test of Equality of Error Variances

showed that the assumption of equality of variance for dependent variables was not violated (Table 2).

Table 2: Levene's Test of Equality of Error Variances

|  | F     | df1 | df2 | Sig.  |
|--|-------|-----|-----|-------|
| Awareness of how AC software functions     | 2.070 | 1   | 89  | 0.154 |
| Educational value of AC software           | 1.725 | 1   | 89  | 0.192 |
| Users' dependence on AC software           | 0.080 | 1   | 89  | 0.778 |
| The way AC software helps English spelling | 0.047 | 1   | 89  | 0.829 |

The results from the Multivariate tests table for the main effect suggested that there was a statistically significant difference between two groups on the combined dependent variables (Wilks' Lambda=.877;  $F=3.012$ ;  $p=.022<.001$ ; partial eta squared=.123). By applying Bonferroni adjustment to the alpha value (.05/4=.0125), when the results for the dependent variables were considered separately, the only difference to reach the statistical significance was factor 1, awareness of how autocorrect software functions (Table 3). An inspection of the mean scores (Table 1) indicated that male students' mean on component 1 (mean=4.122, SD=.872) is higher than that of female students (mean=3.589, SD=1.106).

Table 3: Tests of Between-Subjects Effects

| Source          | Dependent Variable | Type III Sum of Squares | df | Mean Square | F        | Sig.  | Partial Eta Squared |
|-----------------|--------------------|-------------------------|----|-------------|----------|-------|---------------------|
| Intercept       | Component 1        | 1344.956                | 1  | 1344.956    | 1379.951 | .000  | .939                |
|                 | Component 2        | 1367.892                | 1  | 1367.892    | 1345.080 | .000  | .938                |
|                 | Component 3        | 797.258                 | 1  | 797.258     | 1987.978 | .000  | .957                |
|                 | Component 4        | 1131.973                | 1  | 1131.973    | 935.688  | .000  | .913                |
| gender          | Component 1        | 6.429                   | 1  | 6.429       | 6.596    | .012* | .069                |
|                 | Component 2        | 4.947                   | 1  | 4.947       | 4.864    | .030  | .052                |
|                 | Component 3        | .774                    | 1  | .774        | 1.931    | .168  | .021                |
|                 | Component 4        | .654                    | 1  | .654        | .541     | .464  | .006                |
| Error           | Component 1        | 86.743                  | 89 | .975        |          |       |                     |
|                 | Component 2        | 90.509                  | 89 | 1.017       |          |       |                     |
|                 | Component 3        | 35.693                  | 89 | .401        |          |       |                     |
|                 | Component 4        | 107.670                 | 89 | 1.210       |          |       |                     |
| Total           | Component 1        | 1460.563                | 91 |             |          |       |                     |
|                 | Component 2        | 1484.250                | 91 |             |          |       |                     |
|                 | Component 3        | 842.320                 | 91 |             |          |       |                     |
|                 | Component 4        | 1251.250                | 91 |             |          |       |                     |
| Corrected Total | Component 1        | 93.172                  | 90 |             |          |       |                     |
|                 | Component 2        | 95.456                  | 90 |             |          |       |                     |
|                 | Component 3        | 36.467                  | 90 |             |          |       |                     |
|                 | Component 4        | 108.324                 | 90 |             |          |       |                     |

## 4. Discussion

The main aim of this study was comparing perceptions of automatic spelling correction software use in learning English as a foreign language among male and female EFL learners. Ninety-one students of a state university in Tehran participated in the study and expressed their perceptions of autocorrect software use with respect to four factors including awareness, educational value, use dependence and helpfulness of the software.

The result of descriptive statistics showed that generally Iranian EFL learners- regardless of their gender- used autocorrect

software for learning English at an average level, while all students asserted that they owned smartphones. Considering the ubiquity of technology in the 21<sup>st</sup> century, the penetration rate of mobile use among the nation, and the availability of autocorrect software on almost all smartphones this finding is rather disappointing. What should be considered, however, is that automatic correction option of English keyboard is normally activated by English speaking users for communicating in English such as texting. This happens when the interlocutors use English as the language of everyday communication and they are competent in using English. That is, they should either be native speakers or have good command of English to be able to fluently use English in their personal or professional communication. As participants of this study were EFL learners, they were not required to use English very frequently in their everyday communication and their use of English was limited to doing language class activities. Further, they were at an intermediate level of language proficiency that limits the use of autocorrect software, as research documents a direct relationship between technology use and language proficiency in general (Naevdal, 2007) and autocorrect software use in particular (McSweeney, 2017).

Further, it was found that language learners' awareness of the way autocorrect software functions and its educational value were rather high. It means that university students knew if their device had autocorrect software and how it worked; and they believed that autocorrect software is a valuable educational application that can help them overcome their problems in spelling English words. The finding underscores the importance of technology users' awareness of the way technology works and its perceived value by the users. This is in line with theoretical underpinnings on the role of attitudes and perceived value of technology in intentional behavior of users (e.g., Fishbein, & Ajzen, 1975) as individuals' favorite attitudes towards technology and its educational value can influence their willingness to sustain using technology for learning (Liaw, Huang, & Chen, 2007). This finding is especially related to cognitive component of attitudes towards technology and users' perceptions and beliefs of using technology in certain situations for specific purposes (e.g., leaning English and doing related tasks and activities). The finding can also be

interpreted within the framework of Technology Acceptance Model (Davis, 2007; Venkatesh & Davis, 2000) that explains the users' behavioral intention and actual behavior based on certain variables including perceived usefulness and perceived ease of use.

The result of inferential statistics primarily revealed a significant difference between male and female students' perceptions of autocorrect software use for learning English, while male students were found to hold more positive perceptions of autocorrect software use in comparison to female students. This finding is supported in the literature by Gender Digital Divide (GDD) phenomenon that is simply "gender divide in access, uptake and usage of technological tools" (OCED, 2018, p. 19). GDD is based on the fact that women have lower tendency to use technology, have limited ownership of technological devices, are less frequently online, and are less technologically competent in comparison to male counterparts. Reasons of unbalanced use of technology between men and women can be related to affordability, awareness, and technology illiteracy (OCED, 2018). This assumption is supported by the findings of the current study as female participants were found to be less aware of the way autocorrect software functions on their devices and did not believe in educational value of the program to the extent male participants did. The lower perceptions can also be related to lower interest in using technological devices (Intel & Dalberg, 2012) and finding technological devices less beneficial for learning English (Fallows, 2005).

However, if this finding is looked at from another perspective, limited use of autocorrect software among female participants can be related to higher language competency and being independent of autocorrect software to correct spelling mistakes. This proposition needs further verification by follow-up studies, though. The finding can also be interpreted from a cognitive perspective that supports gender differences in brain activity and information processing. Male learners have been found to be better in visuospatial tasks while female learners are better at doing verbal and memory tasks (Bevilacqua, 2017). Therefore, female students could manage their learning problems by relying on their memory without referring to autocorrect software in the process of learning the



spelling of English words and thus they were not very much dependent on the program.

### 5. Conclusion

This study investigated male and female students' perceptions of automatic spelling correction software use for learning English spelling. The result revealed that in general language learners have positive perceptions of using autocorrect software in learning English. Male students, however, were found to have more positive perceptions of the program in comparison to female students. Due to scarcity of studies on this issue, follow-up research is required to shed more lights on the reasons why gender has a role in students' perceptions of using this technology in language classes although digital gender divide is reported to be closing.

Experimental studies and triangulation of the findings of quantitative studies by qualitative data collection techniques such as interviewing or observing students' patterns of behavior while using the program are recommended. Comparative studies on the impact of autocorrect software use on the development of literacy skills among L1 and L2 language learners is also of high value.

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