A Gender-based Study of Informal Fallacies of Argumentation: The Case of Iranian Advanced EFL Learners' Writing

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Abstract
Informal fallacies of argumentation as pitfalls of reasoning appear frequently in students' written texts, specially EFL / ESL Learners' argumentative essay writings. The present study examines whether gender could be considered as a determining factor influencing Iranian advanced EFL learners' argumentative writings with regard to informal fallacies of argumentation. The corpus comprised of argumentative essays written by 120 Iranian male and female English language learners. The participants' age and discipline were also included as independent variables. Nine major categories of informal fallacies were examined in learners' texts and the observed frequencies were analyzed using MANOVA. The results of the Multivariate Tests for all independent variables and /or their interactions indicated no significant differences for the overall informal fallacies. However, three separate instances of differences were observed. Finally, the findings of the present are discussed in relation to the previous literature and some implications of the study are suggested.

Keywords: EFL Writing; Informal Fallacies of Argumentation; Iranian EFL Learners; Argumentation; Gender; Age; Discipline

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Introduction

One of the yardsticks in determining the quality of arguments is the absence or presence of fallacies of argumentation, especially informal fallacies. Walton (1991) characterizes a fallacy as "a calculated tactic of deceptive argumentation used by one participant in a dialogue to 'trip up' another participant" (p. 337). As R.M. Johnson (1998) puts it, "we reason so frequently and so naturally that we are often not aware of the logical principles underlying our reasoning" (p. 2). Following Johnson (ibid), R.H. Johnson and Blair (2006) stress the important relationship between logical argumentation and logical fallacies. They look at informal fallacies as a means through which students can analyze and evaluate their arguments. Further, they maintain that being faithful to the standards of Relevance, Sufficiency, and Acceptability (RSA triangle) is necessary to make a good argument and, hence, a fallacy is "a pattern of argumentation that violates one of the criteria a good argument must satisfy and that occurs with some marked degree of frequency" (Johnson and Blair, 2006, p. 54).

Likewise, some scholars consider high quality argumentations and fallacy-free reasoning among the major concerns in written discourse (Walton 2002) and in students' written argumentations (Dietsch, 2005; Johns, 1993; McCart, 2008; Petit, and Soto, 2002; Tindale, 2007). They argue that students' problems may stem from lack of sound and logical reasoning and persuasion along with pitfalls such as fallacies of argumentation which appear at surface logical and convincing but contain mistakes in reasoning. These problems for EFL students become even worse, as pointed out by the Educational Testing Service center (2009), when students are supposed to write essays in international proficiency examinations such as GRE and IELTS and employ sound argumentations as a well-established criterion of evaluation.

This study sought to examine the frequency of informal fallacies of argumentation in written argumentation of Iranian male and female EFL learners and to probe whether a pattern would be found regarding the use and selection of these fallacies in their writings.

Informal Fallacies of Argumentation

Before reviewing the background literature on informal fallacies, we briefly introduce the fallacies under focus in this study.

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***Hasty Generalizations and Sweeping Generalizations*:** As Johnson. R. M. (1998) maintains, "the fallacy of *hasty generalization* occurs when a generalization is formed on the basis of an unrepresentative sample"(p. 256). Further, Engel (1982) argues that "the fallacy of sweeping generalization is committed when a general rule is applied to a specific case to which the rule is not applicable because of the special features of that case" (p.105).

Faulty Analogy: Johnson. R.M., (1998) states that, "an argument from analogy draws a conclusion about something on the basis of an analogy with or resemblance to some other things. The assumption is that if two or more things are alike in some respects, they are alike in some other respects" (p. 269). Walton (2008) then argues that analogy is faulty when 'two situations compared are not similar in the relevant respect' (p. 314)

Ad Hominem: "An *ad hominem* argument is an attack upon the person rather than the person's ideas" (Johnson. R.M., 1998, p. 257). Johnson indicated three main types for this fallacy as: abusive, circumstantial, and *tu quoque*.

Begging the Question: Trapp, Driscoll, and Zompetti, (2005) state that this fallacy is "a fallacy of acceptability that occurs when a debater introduces evidence that is the same as the claim" (p.246).

Fallacy of Either/ Or (Black and White Fallacy or False Dichotomy): Johnson. R.M, (1998) defines this fallacy as consisting of "mistakenly assuming that there are only two possible solutions to some problem or that solving some problem consists of choosing between only two alternatives" (p. 262).

Red Herring: Johnson. R. M., (1998) states the history behind this name, as "the practice of using a herring" to "divert hunting dogs from the scent of a fox" (p. 275), and asserts that one would commit such a fallacy by bringing some other issues, seemingly related to the basic issue, to distract the reader/listener from the main issue.

Post hoc/ False Cause or Cause and Effect Fallacy: The fallacy of cause and effect, according to Johnson. R. M. (1998), is committed when "an arguer concludes that one event or thing A causes another event or thing B when in fact there is no good evidence of a causal relation" (p. 259).

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Appeal to Tradition: Trapp et al. (2005) argue that appeal to tradition is a fallacious argument committed when the arguer takes something for granted based on past assumptions and traditions rather than the action's merits.

Violation of RSA (Relevance, Sufficiency, Acceptability): Johnson, R.H., and Blair (2006) call for being faithful to RSA triangle consisting of standards of Relevance, Sufficiency, and Acceptability, and suggest lack of one or more of these criteria would cause an argument to be fallacious. Damer (2008) maintains that relevance, sufficiency, and acceptability criteria in turn require that one who presents an argument for or against a position should attempt to set forth only reasons that are directly related to the merit of the corresponding position, to provide reasons that are sufficient in number, kind, and weight, and to use reasons that are likely to be accepted by a rationally mature person.

Background

Many researchers have examined informal fallacies in terms of their nature and occurrence in various written and oral discourse of different disciplines in order to develop theories of argumentative discourse. In this paper, we present those works that are more relevant to the nature and purpose of this research. In a pioneering study, Johnson, R.H. (1990) accused Charles Hamblin, the author of *Fallacies* (1970), of critical failures and maintained that Hamblin himself committed fallacies in his treatment of textbook writers on the fallacies prior to 1970.

From among the varieties of informal fallacies, 'Begging the Question' has received a lot of controversial discussions. Ikuenobe (2002), for example, expresses his scepticism about whether we can assume 'begging the question' as a fallacy or not. He first tries to define the nature of a 'fallacy' by adapting an epistemic view of fallacies, and finally asserts that it is more a matter of a serious error than a fallacy. Two years later, Truncellito (2004) took up the same issue and tried to resolve the debate between those who consider begging the question as a fallacy (e.g. Sorenson, 1996, as cited in Truncellito, 2004), and those who believe it is not a fallacy (e.g. Robinson, 1971, as cited in Truncellito, 2004), with the distinction between logical and rhetorical fallacies. Ritola (2003), however, believes that begging the question is logically valid and maintains that in order to prove its fallaciousness, one must use other accounts than validity.

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Among other major informal fallacies studied,' Walton (1999a) approached 'Hasty Generalization' from a theoretical point of view and asserted that the prevailing classification of fallacious generalizations embraces three main types: "the universal generalization of the 'for all x' type" which was dominant in classical deductive logic; "the inductive generalization based on probability", and presumptive and defeasible generalizations as a useful assumption in analysing informal fallacies (p.161).

Moving to the next controversial discussions on informal fallacies, the literature suggests 'ad fallacies'. While Mill (1941) does not consider ad fallacies worth spending time on, several other researchers such as Biro and Siegel (1992), Walton (1999b), Walton (2000), analyzed these categories of fallacies in detail together with their occurrence in various written discourse types. For example, Biro and Siegel (1992) picked up fallacy of *ad hominem*, and fallacy in arguments from authority in general, and tried to explain it according to their theory embracing epistemic normativity of judgements about arguments. Likewise, Walton (2000) examined circumstantial *ad hominem* in political argumentation, in a case study focusing on written argumentation in *Time* magazine's "Election Notebook" of 18 November 1996. Walton (1991), however, acknowledges the point that *argumentum ad hominem* "is not always fallacious, or even erroneous or inappropriate . . ." (p. 354), and continues that "some kinds of personal attack, in the appropriate context of discussion, can be legitimate arguments for questioning an arguer's sincerity, objectivity, or commitment to truth and good reasoning" (p. 363) . Similarly, Walton (1999b) investigated different cases of being or not being *argumentum ad ignorantiam* (i.e., argument from ignorance or appeal to ignorance) in several discourse types such as Senator Joseph R. McCarthy's political discourse in which he, instead of proving his claim by bringing logical types of evidence, based his claims on the lack of any evidence.

Not many researches, however, have examined the occurrence of fallacies using a quantitative design. Alagozlu (2007) investigated the observed frequency of informal fallacies of argumentation in the argumentative writings of 76 Turkish EFL students in an English Language Teaching (ELT) department. Among six categories of informal fallacies under study, Alagozlu found Oversimplification as the most frequent type (n = 41), and Begging the Question and also *Ad hominem*, as the least frequent ones.

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Gender and Argumentative writing

Gender issues in argumentative writing, especially females' writings, have been the focus of many studies. Bordelon (2005), for example, supports feminist scholars who defend female rhetoric. Bordelon (ibid) supported their views after Connors (1995) asserted the decline of rhetoric, oratory, and debate in argumentation by entrance of women in higher education.

Some early studies such as Schick (1992) attempted to identify the reasons behind gender variations in written argumentation of females and males. He maintains that gender differentiation is more a matter of cultural settings than biological sex. Other studies such as Bermúdez and Prater (1994) analyzed the actual differences in ESL students' persuasive writings. They concluded that female writers showed more elaboration and clarity in terms of expressed opinions than males. As another well-known attempt to investigate gender differences in first language writing, one can name Punter and Burchell (1996) who worked on GCSE English language exam in the UK primary schools. The study revealed that girls obtained higher scores when the writing was imaginative, reflective, and empathetic, while boys scored better in argumentative and factual writing. Similarly, Meinhof (1997) asserts that women's writings were more self-reflexive and evaluative, while men's texts were more egocentric.

Jeong and Davidson-Shivers (2003) investigated gender variations in the context of critical argumentation in online debates. They found that females tended to engage in argumentation with other females than with males, while males showed a greater tendency to participate in argumentative exchanges with other males than with female participants. In a larger scale, as a seminal study on gender issues and argumentative discourse, Carrillo and Benítez (2004) incorporated both gender and educational level in selecting samples of argumentative writings. The results revealed that the relationship between gender and discourse was not significant. However, Marttunen, et al. (2005) concluded that in analysing an argumentative text, female students gave more analytical comments on a given argumentative text than their male counterparts, and females' responses to most of the argumentative elements of the task were more explicit. Waskita (2008) examined university students' ESL academic writing in terms of gender and some common features including methods of presenting arguments, syntactic complexity, and means of integrating cited information. The findings revealed

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significant differences in terms of the aforementioned features between the two genders' writings.

However, no study in the current literature has addressed the diverse aspects of written arguments in an eastern culture context in one study. The gap becomes more evident when it comes to studies dealing with EFL students both as mainstream academic students and learners in language institutes. Some studies (e.g., Alagozlu, 2007; Waskita, 2008) explored the written argumentation of EFL and/ or ESL students. However, as the literature suggests, given the marked socio-cultural context of Iran and the educational system, no studies have been done concerning Iranian EFL students' argumentative writings especially in terms of observed informal fallacies. Therefore, this study was designed to examine the frequency of nine categories of informal fallacies in the written argumentation of Iranian EFL learners in relation to their gender. More specifically, the following research questions prompted this research:

1. What are the most frequent types of informal fallacies in the argumentative writings of Iranian female and male advanced EFL learners?

2. Are there any significant differences between Iranian female and male advanced EFL learners in terms of type and frequency of informal fallacies in argumentative writings?

3. Are there any significant differences in terms of type and frequency of informal fallacies of argumentation between Iranian advanced EFL learners of various age groups?

4. Are there any significant differences in terms of type and frequency of informal fallacies of argumentation between Iranian advanced EFL learners of various disciplines?

Method

Participants

The participants of this study were 60 female and 60 male EFL learners in TOEFL and IELTS writing preparatory courses at Iran Language Institute (ILI), Iran. All subjects had already passed a standard placement test and their general proficiency level was identified as advanced. The rationale behind selecting advanced students was that this study focused on the EFL learners' reasoning and strategies of presentation of their arguments in argumentative essay writings in order to find

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possible distinctive pattern of the frequency and type of informal fallacies in their arguments; hence, no manipulation effect of linguistic knowledge variable was considered. Accordingly, learners must enjoy reasonable mastery on linguistic (e.g., grammar and vocabulary) knowledge so that they could write down their ideas and reasons easily and do not tend to omit or avoid any reasons due to their low language competence or lack of proper linguistic options. Nationality and language background of participants were controlled in this study. All participants were Iranian, with Farsi as their first language. The participants' profile can be summarized as follows:

-Gender with two values of 1= Female (N = 60), and 2= Male (N = 60);

-Age with three values of 1= 17-22 years old, 2= 23-30 years old, and 3= 31-40 years old;

-Discipline with four values: High school, Diploma and below; Humanities and Social Sciences; Sciences, Engineering, and Medical Sciences; Language and Arts.

Instrumentation

All participants were given a writing test (See Appendix A) consisting of a clear and detailed topic that includes a quick brainstorming note as well as guidelines on how they were expected to write the essay. The instrumentation was checked by four experts to ensure the content and clarity of the topic, instructions, format, relevance, and the appropriateness of the topic in terms of students' general knowledge. A word limit was set for the length of the argumentative writings and those essays containing less than 100 words were omitted from the sample. The participants were also allowed to use dictionaries to check words and their spelling, since the study did not concentrate on linguistic variables. No hint was given to the learners as to the objectives of the research and the teachers were asked to administer the test in a natural setting and release no clues as to what elements were going to be analyzed. The participants were asked to fill out the box on top of the test paper containing questions on some relevant demographic information.

Evaluation Scheme and Data Analysis

The evaluation scheme involved two main paradigms that were complimentary for the purpose of the present study. The first evaluative paradigm was based on Johnson, R.M. (1998) and allowed the researchers to identify statements, premises, conclusions, and arguments in the texts as well as enthymemes and to supply those enthymemes in the arguments, and finally to apply the principle of clarity in the arguments. The paradigm also presents methods of identifying informal fallacies

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for the analysis of the written argumentative discourse. The second paradigm which was based on Walton, Reed, and Macagno (2008), consists of a series of argumentative schemes consisting argument forms for each potential fallacy, along with a set of critical questions for identifying fallacies.

Starting with T-units for the analysis of written texts, the researchers adhered to Johnson's (ibid) notion of statement according to which, not all T-units are statements. He argues that "in general we can say that questions, exclamations, commands, requests, and the like are not statements but may be the occasion for inferring, or often may be rewritten as, statements" (p. 4). An informal fallacy may be picked up inside a single statement or by considering the whole of an argument which is defined as "a group of statements" and "an identifiable piece of reasoning in which a point is expressed and reasons are offered for that point" (Johnson, R. M. 1998, p. 7).

The next step is to examine an argument along with its components (i.e., premises and conclusion). According to Johnson, R. M. (1998), a premise is "a statement that provides a reason for the conclusion" (p. 8). In exposing and analyzing an argument, two points should be taken into account: supplying the missing points or enthymemes and the principle of charity. The former is referred to as "arguments that are missing a premise or conclusion" (p. 16). To identify enthymemes, Johnson argues, "we should be guided by the principle of charity, according to which we are to interpret the argument in its most plausible form" (p. 313). At this stage, two points are necessary to be considered. First, each argumentative essay may consist of one or more arguments. Second, the present study does not analyze formal fallacies; thus, the qualitative analysis of written discourse based on deductive validity and inductive strength which are helpful to determine formal fallacies and the goodness or badness of an argument is not taken into account in this study.

The argumentation schemes suggested by Walton et al. (2008), however, are more detailed and embrace a compendium of ninety-six schemes. While in Johnson, R.M.' model (1998), one should rely on the evaluation direction justifications to pick up an informal fallacy in the argument, Walton et al.'s model, by providing critical questions, helps the analyst to proceed step by step through answering the questions that include all possible ways the given argument could be considered as a valid argument and fallacy-free, or include a potential fallacy.

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Besides, in Walton et al's (ibid) model, each argument may have different forms; hence, to pick up the related fallacy, one should go through all different related schemes.

To ensure reliability of the data coding, a third analyst worked on half of the samples selected randomly and analyzed the arguments based on the steps provided above. If there was any disagreement in the mentioned steps between the three analysts, the data would be reconsidered until an agreement was achieved. We categorized tokens of informal fallacies in the argumentative essay samples in terms of gender, age and discipline and tabulated the frequencies of observed fallacies based on the nine major types mentioned earlier.

Since more than 5% of the cells had zero values, we could not conduct Chi-Square analysis. Therefore, the researchers followed Leech, Barrett, and Morgan (2005), who argue that it is also possible to use "t-test, ANOVA, or Pearson Correlation" for a dichotomous dependent variable, for example the use of a "nominal (three or more unordered levels) dependent variable with parametric statistics" (p.51). Accordingly, a 3-way MANOVA was applied, using SPSS statistical software, version 14.0.

Results and Discussion

Informal fallacies, as the dependent variable of this study, were classified into nine major categories and abbreviated in the following tables as: 1-H/S.G: Hasty (Sweeping) Generalizations, 2-F.A: Faulty Analogy, 3-Ad.H: *Ad Hominem,* 4-Be.Q: Begging the Question, 5-Ei/or: Fallacy of Either/ or (False Dichotomy), 6-Re.H: Red Herring, 7-P.h: *Post hoc* (False Cause/ Effect), 8-Ap.Tr: Appeal to Tradition, and, finally, 9-V.RSA: Violation of RSA (Relevance, Sufficiency, Acceptability).

To examine fallacies in the learners' written argumentations, descriptive and inferential statistical analyses were completed. The descriptive profile of all types of informal fallacies observed across gender, age, and discipline is presented in Appendix B. In order to probe the first null hypothesis predicting no statistically significant differences between Iranian advanced female and male EFL learners in terms of type and frequency of informal fallacies in argumentative writings, a 3-way MANOVA was applied on the observed informal fallacies in the nine categories for both genders, the results of which are depicted in Table 1 below.

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Table1
Test of Between-Subjects Effects for gender and fallacies

Independent Variable	Dependent Variables	F	Sig.	Partial Eta Squared
Gender	H/S.G	1.118	.293	.011
	F.A	.117	.733	.001
	Ad.H	.158	.692	.002
	Be.Q	.977	.325	.010
	Ei/or	.864	.355	.009
	Re.H	1.864	.175	.019
	P.h	.490	.486	.005
	Ap.Tr	.857	.357	.009
	V.RSA	2.200	.141	.022

As Table 1 illustrates, there is no statistically significant difference between the gender of learners and the frequency of informal fallacies of argumentation in the participants' writings: none of the *p* values fell below 0.05, and the F values are not considerably large. Besides, all the effect sizes of eta are smaller than the typical. According to Leech, Barrett, and Morgan (2005), partial eta or the effect size expresses the strength of association; hence, the effect sizes ranging between 0.36 and 0.14 are considered medium to small and less than 0.14 are considered small. This means that the first null hypothesis is not rejected.

The second null hypothesis predicts no statistically significant differences between the age groups of Iranian advanced EFL learners in terms of type and frequency of informal fallacies in their argumentative writings. Table 2 presents the results of age-based analysis of informal fallacies in the nine categories of informal fallacies in the learners' argumentative texts.

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Table 2
Test of Between-Subjects Effects for age and fallacies

Independent Variable	Dependent Variables	F	Sig.	Partial Eta Squared
Age	H/S.G	2.577	.081	.050
	F.A	.195	.824	.004
	Ad.H	.228	.796	.005
	Be.Q	.404	.669	.008
	Ei/or	.055	.946	.001
	Re.H	.236	.790	.005
	P.h	1.563	.215	.031
	Ap.Tr	.894	.412	.018
	V.RSA	.183	.833	.004

The results show that there are no statistically significant differences between the age of participants and the type and frequency of informal fallacies of argumentation in the nine categories: none of *p* values approached 0.05, F values for all nine informal fallacies are 2.57, 0.19, 0.22, 0.40, 0.05, 0.23, 1.56, 0.89, 0.18, and the effect sizes for all nine fallacies show values below 0.14. Therefore, the second null hypothesis is not rejected either.

The third null hypothesis of the study states: There are no statistically significant differences between the disciplines of Iranian advanced EFL learners and type and frequency of informal fallacies in their argumentative writings. The findings of the discipline-based analysis of informal fallacies are presented in Table 3 below.

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Table 3
Test of Between-Subjects Effects for discipline and fallacies

Independent Variable	Dependent Variables	F	Sig.	Partial Eta Squared
Discipline	H/S.G	.124	.946	.004
	F.A	.557	.645	.017
	Ad.H	.533	.661	.016
	Be.Q	.543	.654	.016
	Ei/or	.702	.553	.021
	Re.H	1.725	.167	.050
	P.h	1.941	.128	.056
	Ap.Tr	.396	.756	.012
	V.RSA	2.709	.049	.077

As Table 3 depicts, for the first eight categories of informal fallacies there, is no statistically significant difference between disciplines of the participants, as all observed *p* values are larger than 0.05; however, there was a significant difference between discipline of the participants and use of the 9th category of informal fallacies, that is the violation of RSA: p value = 0.04 and the F value is 2.70. The strength of the effect of discipline on this fallacy was 0.077. To locate the exact differences between the disciplines, we compared the means of all four categories on the given fallacy:

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Table 4
Mean of All Categories of Discipline for the V.RSA

Dependent Variable	**Discipline**	**Mean**
V.RSA	Diploma and below	.850 a
	Humanities & Social Sciences	1.311
	Sciences/ Engineering/ Medical Sciences	.849
	Languages and Art	1.271

a. Based on modified population marginal mean

The comparison of means shows that group 2- Humanities and Social Sciences- and group 4- Languages and Art- had higher means, indicating that the learners belonging to these two groups tended to violate the RSA criteria more frequently than the other discipline groups.

The results of the Between-Subjects Effects as illustrated in Table 5 confirm that the interactions of gender * age for the 4th fallacy (i.e. begging the question) and the 6th fallacy (i.e. red herring) are significantly different.

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Table 5
Test of Between-Subjects Effects for the interaction of gender* age and fallacies

Independent Variable	Dependent Variables	F	Sig.	Partial Eta Squared
Gender * Age	H/S.G	.470	.621	.010
	F.A	.384	.682	.008
	Ad.H	.517	.598	.010
	Be.Q	5.274	.007	.097
	Ei/or	.928	.399	.019
	Re.H	3.328	.040	.064
	P.h	1.874	.159	.037
	Ap.Tr	1.357	.262	.027
	V.RSA	2.403	.096	.047

As Table 5 indicates, except for the Be.Q and the Re.H fallacies, there are no statistically significant differences in the analysis of the interaction of Gender * Age and informal fallacies. Table 6 illustrates the descriptive statistics for Gender * Age on the Be.Q and Re.H fallacies.

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Table 6
Means for the Be.Q and Re.H Fallacies across age and gender

Dependent Variable	Gender	Age	Mean
Be.Q	Female	17-22 years old	.171
		23-30 years old	.231
		31-40 years old	.967
	Male	17-22 years old	.597
		23-30 years old	.344
		31-40 years old	.125
Re.H	Female	17-22 years old	.488
		23-30 years old	.333
		31-40 years old	1.033
	Male	17-22 years old	.389
		23-30 years old	.650
		31-40 years old	.250

The comparison of all the means of females and males in the three age groups verified that females of 31-40 years used the highest number of 'begging the question' as a fallacy in their writings among both females and males, and females of 17-22 years used the least number of begging the question in their writings. For the 6th fallacy, 'red herring', again, females of 31-40 years used red herring fallacy most frequently in their argumentative writings, while males of 31-40 years used the least amount of red herring fallacy.

The results of the interaction of gender * discipline and use of informal fallacies confirm that there are no statistically significant differences in the interaction of

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gender and discipline of participants and the frequency of informal fallacies in the nine categories in the written argumentations; all Sig. values are larger than 0.05 and their corresponding F values are not considerably large. Likewise, the findings show that there are no statistically significant differences between the interaction of age * discipline of the participants and the number of informal fallacies for each nine categories; all p values are higher than 0.05, and the F values corresponding to each nine informal fallacies for the interaction of age * discipline are not large.

The results of the interaction of all three independent variables show that except for the 4th fallacy-Begging the Question- there are no statistically significant differences between the interaction of gender * age * discipline and the number of fallacies for each nine categories of informal fallacies, since all Sig. values are smaller than 0.05. Regarding the 4th fallacy or begging the question, the p value is 0.056 that approaches the criterion level or significance level set in this study, so from the statistical point of view we cannot consider it as being significant. However, we might, with some caution, decide that there is a difference, though not significant, between the interaction of gender * age * discipline of the participants and the number of begging-the-question fallacy in the participants' argumentative writings, although the corresponding F value did not prove to be considerably large, F = 2.39.

The results of Multivariate Tests of Effects on the Dependent Variables and interactions are illustrated in Table 7. The findings show that for the total number of fallacies for all nine categories altogether, there was no significant difference due to any of the independent variables and/or their interactions based on the values of Wilks' Lambda. Lambda is a measure of the amount of variance in the dependent variables that is not explained by differences in the level of the independent variable. This value varies between 0 and 1, and the lower the Lambda value, the more the given effect contributes to the model. However, as Table 7 indicates, Lambda values for independent variables and their interactions show a large number, verifying that the effects or independent variables are not significant for dependent variables.

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Table 7
Multivariate Tests of Effects Significance on Dependent Variables

Effect	Value Label	Value	F	Sig.	Partial Eta Squared
Gender	Wilks' Lambda	.919	.885	.542	.081
Age	Wilks' Lambda	.896	.562	.922	.053
Discipline	Wilks' Lambda	.758	.973	.508	.088
Gender * Age	Wilks' Lambda	.743	1.598	.065	.138
Gender * Discipline	Wilks' Lambda	.738	1.072	.374	.096
Age * Discipline	Wilks' Lambda	.668	.708	.941	.065
Gender * Age * Discipline	Wilks' Lambda	.655	1.124	.293	.100

As depicted in Table 7, the Lambda value for Gender is .91 which is a considerably large number, F (9, 90) = .88, and p= 0.54, indicating that gender did not have any significant effect on the type and frequency of informal fallacies in participants' writings in this study. Likewise, the 3-way MANOVA did not reveal any significant multivariate main effect for Age, Wilks' λ = .89, F (18, 180) = 0.56, and p = 0.92; nor for Discipline, Wilks' λ = .75, F (27, 263) = .97, and p = 0.50, confirming that Discipline does not have a significant effect on the frequency of informal fallacies of argumentation in participants' writings.

To discuss the patterns of findings, as mentioned earlier, most research studies on fallacies of argumentation are of qualitative nature in which instances of different categories of informal fallacies were analyzed in oral/written discourse and basically political discourse, newspapers and magazines, editorials, debates,

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and public discourse (Copi, 1953, cited in Walton, 1999a; Johnson, 1990; Walton, 1996, 1999b, 2000; Ritola, 2003). There are few research studies incorporating a comprehensive quantitative analysis of informal fallacies in EFL learners' argumentative writings.

One relevant study is Alagozlu (2007) who analyzed an EFL writing corpus for Turkish students and reported some categories of fallacies : Oversimplification (N= 41), Straw Man Fallacy (N= 36), Irrelevant conclusion (N= 24), Hasty generalization (8), Begging the question (N=1), and *Ad hominem* (N=1). Hasty generalization, Begging the question, and *Ad hominem* are identical to the fallacies under analysis in the present study. His category of "irrelevant conclusion" is very similar in nature to the category of "Violation of RSA" in the present study.

Although Alagozlu did not attempt to examine the patterns of the use of different types of informal fallacies across gender, his study signifies one of the few attempts towards quantitative analysis of informal fallacies in written argumentation of Asian students. His small sample makes the comparison between the findings of that research and ours very difficult. However, Oversimplification was the most frequent informal fallacy in the corpus of EFL Turkish writers, while in the present study, Violation of RSA turned out to be the most frequent type of informal fallacy in EFL Iranian students' writings of both genders: 66 cases in female students' and 52 in males' writings. Nevertheless, the fallacy of Ad hominem in both studies was found as the least frequent one in both EFL groups of students with a frequency of 1 in EFL Turkish students' corpus and 3 in the Iranian corpus (1 in females and 2 in males). The pattern for the use of 'Begging the question', however, was different in the two studies. Whereas Turkish students showed no tendency to use this fallacy (N = 1), the Iranian EFL students used it quite frequently (17 cases for females and 19 for males). Also, the statistics for the fallacy of Hasty generalization were different across the two studies: Turkish students used it 8 times, arguably a high frequency given the small sample size of the study while the Iranian female and male students used this type of fallacy 29 and 21 times, respectively.

At a larger scale, patterns of gender variation in writing seem to have fluctuated through time. Starting from 1994, with early pioneering studies of gender effects on argumentative writings until recently, a trend may be discerned regarding the quality of written argumentation and gender differentiations. Earlier studies, for

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example Bermúdez and Prater (1994), Punter and Burchell (1996), Meinhof (1997), Morris (1998), Kanaris (1999), insist on the existence of differences between males and females in terms of writing styles and argumentative writings, while the later scholars (e.g., Francis, Robson, and Read,2001; Francis, Read, Melling, Robson, 2003; Römer, 2003; Carrillo and Benítez, 2004; Marttunen, Laurinen, Litosseliti, and Lund, 2005), identify few or no differences between the writings of different genders, particularly argumentative writers of different backgrounds and the quality of argumentation and reasoning, and , more specifically, frequency of pitfalls in logical argumentation.

Gender variations could be caused by a variety of factors such as inequality of assessment, and global factors such as social/ cultural and educational influences. Earl-Novell (2001), among others, seems to confirm the first reason mentioned above. She argues that inequality in assessment is the main cause of considering 'gendered' style of writing in undergraduate students. She insists that undergraduate writing is 'gendered' based on certain stereotypes and presumptions. McCrum (1994, 1996), Martin (1997), and Sutherland (1997) all cited in Earl-Novell (2001) also hold the same view, confirming that the main reason why females and males appear to be different in their writing performances is inequality of writing assessment more than an actual gender differences. As for the second reason, Schick (1992) seems to come to similar conclusions. As he puts it, the rationale behind investigations was the concept of cultural basis of gender in place of assumptions of differences based on biological sex. He believes that gender as a social group marker is associated with differences in social, emotional, cultural, and economic situations which, in turn, may affect the use of language and literacy. Likewise, Collins, Kenway, and McLeod (2000) argued that socioeconomic status was a variable that made a difference in the educational and language performance of males and females in Australia.

Conclusion

A general conclusion drawn based on the findings is that the three variables under research (i.e. gender, age, and discipline) do not have any significant effect on the use of informal fallacies of argumentation in written discourse of Iranian advanced EFL learners, for the three instances that made a difference were actually quite few compared to the total number of comparisons made. There might be culturally-oriented reasons for the differences in the type and frequency of observed informal fallacies in subjects' written argumentations. Another conclusion may be that being

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a male or female at present time does not make a significant difference in thinking, reasoning, and argumentation and also to the pitfalls of argumentation such as informal fallacies. A supporting piece of evidence for this conclusion is the patterns of gender differentiation through time as discussed earlier. Among other possible reasons for gender variations, we may refer to inequality of assessment and global influences including social/ cultural and educational influences. However, further research should address the credibility of the above assertions as well as the conclusions of this study.

The present study may promise some pedagogical implications for EFL instruction, specially writing skills. Teachers may raise the awareness of the students concerning reasoning pitfalls, including informal fallacies in their argumentative writings so that they provide solid arguments which are based on logical connections of ideas, and support of the main points with logically compelling reasons and persuasive examples.

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Appendix A
A sample of argumentative essay writing test, including the brainstorming note

Age:	Gender:
Nationality:	Academic discipline:

Fashion adds spice to the life: Colour, variety, and beauty without which world would be a dull place, fashion fans fancy. Chanel, the famous French fashion designer, goes even beyond these boundaries and associates fashion with ideas, the way we live, and what is happening.

Opposers challenge these fancies and resist the idea that a couple of top designers in Paris and London lay down the law of what is appropriate for the rest of the world who usually rush to obey. Oscar Wilde put forward a pungent reaction: **fashion is a form of ugliness** so intolerable that we have to alter every six months!!!

While Domenico Dolce and Stefano Gabbana, two top fashion designers reject any accusation holding that anorexia is related to the fashion industry and cat walks, still the other party keeps on believing new fashions are not but commercial and psychological exploitation of young generation.

Which party deserves a defense?!

Appendix B
Descriptive data for the three independent variables (i.e., gender, age, discipline) and categories of informal fallacies

Gender, Fallacies

	F1	F2	F3	F4	F5	F6	F7	F8	F9
Female	29	4	1	17	3	25	33	4	66
male	21	1	2	19	6	25	28	2	52

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Female, Discipline

	F1	F2	F3	F4	F5	F6	F7	F8	F9
Diploma	2	0	1	0	1	1	1	0	2
Humanities	12	0	0	5	0	10	9	2	15
Sciences	11	4	0	9	1	11	19	2	33
	4	0	0	3	1	3	4	0	16

Female, Age

	F1	F2	F3	F4	F5	F6	F7	F8	F9
17-22	15	2	1	4	1	9	15	0	20
23-30	11	2	0	8	2	11	14	4	35
31-40	3	0	0	5	0	6	3	0	11

Male, Discipline

	F1	F2	F3	F4	F5	F6	F7	F8	F9
Diploma	7	0	0	6	2	3	4	0	11
Humanities	1	0	0	1	0	3	5	0	8
Sciences	9	0	0	9	2	12	13	2	20
Lg, art	4	1	0	3	2	7	6	0	13

Male, Age

	F1	F2	F3	F4	F5	F6	F7	F8	F9
17-22	9	0	0	9	2	5	8	0	17
23-30	9	1	0	7	2	16	11	1	26
31-40	3	0	0	3	2	5	8	1	9

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