MBTI Personality Type and the Utility of Error Correction among English Majors in Taiwan

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Abstract

The issue of whether or not to correct errors in students' writing is controversial. Some scholars argue that error correction is helpful, while others argue that it is ineffective, perhaps even harmful. What is missing from the literature are studies about how error correction might affect the performance of specific types of students. This study, which included 140 undergraduate English majors from Taiwan, examined the relationship between Myers-Briggs Type Indicator (MBTI) personality types on the effectiveness of one kind of error correction of writing.

To identify their personality types, the students completed Form G of the MBTI. To determine their opinions about error correction of writing, the students wrote—at the beginning and the end of the two-semester course—in-class essays about whether or not they wanted to receive error correction of their writing. The purpose of this repetition, using a pre-test/post-test format, was to assist the researchers in the comparison of the students' self-reported opinions about error correction over time. In addition, the researchers compared improvement in students' written grammatical accuracy by the variables of self-reported error-correction preferences and MBTI personality types. The students also completed the grammar section of the Michigan Test of English Language Proficiency (MTELP) at the beginning and the end of the course; its purpose was to double-check any gains in grammatical accuracy in the essays with the results of a standardized grammar assessment. Once the data were collected, the Kruskal-Wallis test

for non-parametric data for chi-square results and the Siegel-Castellan formula for determining differences between ranked means were applied to look for patterns of differences among MBTI personality types about the effectiveness of error correction.

All of the 16 MBTI personality types were found among the 140 undergraduate English majors included in this study. Although most of the students preferred receiving extensive error correction, and benefited from it at a statistically significant level, four MBTI personality types did not prefer it. What is more, for the four types, receiving extensive error correction against their expressed preferences did not help them to improve. These findings applied to both the essay and the MTELP results. Based upon the results of this study, the researchers recommend that teachers, when considering the correction of students' errors, should also consider carefully the self-reported error-correction preferences of students.

Literature Review

Much is written about the utility of error correction of second language writing. Unfortunately, there does not appear to be a consensus about its value. As this paper suggests, part of the problem might be the result of how we as researchers are asking the questions. Instead of exploring the issue as a dichotomous question (Does or does not error correction of L2 writing work?), perhaps we should explore it as a more open-ended one (Which group of L2 learners, if any, might benefit from error correction?).

There is reason enough within the research literature to cheer with, or to jeer at, error correction of L2 writing. Over the years, many researchers have established that it is popular among students. In other words, we know that second language (L2) students often expect teachers to correct written errors (Hedgcock & Lefkowitz, 1994; Enginarlar,

1993; Radecki & Swales, 1988). This sentiment applies to students of various proficiency levels, genders, and countries of origin (Cathcart & Olson, 1976; Chenoweth, Day, Chun & Luppescu, 1983). Along with the numbers of students who want to receive error correction, teachers appear willing to provide it (Schulz, 1996), even though at least some students might not bother to learn from it (Leki, 1991).

Teachers who provide error correction of L2 texts may justify their actions based upon personal experience as well as upon published research findings. Since Truscott (1996) challenged the applied linguistics field to justify the correction of errors in writing, several studies have been conducted in this area, some of which have provided support for the correction of L2 writing errors. Experimental studies by Ashwell (2000), Doughty & Varela (1998), and Ferris & Roberts (2001) found that the correction of errors in written texts was better than providing no feedback in helping students to improve writing skills. These findings corroborated an earlier finding in an experimental study by Fathman & Whalley (1990).

Research results have suggested that the type of error correction can have important effects on the improvement of L2 writing. Using an experimental design, Lee (1997) found that more explicit error correction methods were better in helping students to detect and correct errors, which corroborated the findings of an earlier study by Makino (1993). Using a case study approach, Hyland (1998) discovered that L2 writing students generally valued the feedback that they received from their writing teachers, and they applied it effectively to improve papers. Manley & Calk (1997) concluded that, among students of French, linking error correction to communicative grammar lessons helped to improve writing skills.

Of course, not everyone has agreed about the value of error correction to improve L2 writing. According to the results of experimental studies by Kepner (1991), Semke (1984), and Sheppard (1992), L2 writing students who received error correction often showed no significant benefit in grammatical accuracy. Some have found that error correction might even be harmful, by harming students' attitudes (Semke, 1984), by causing regression in the complexity of content (Sheppard, 1992), and by retarding the development of fluency in writing (Robb, Ross & Shortreed, 1986).

What reasons might explain the failure of error correction? Teachers could be at fault. Several researchers have claimed that teachers provide inconsistent or over-abundant correction of errors, which could confuse students (Chaudron, 1986; Cohen & Robbins, 1976; Fanselow, 1977). More recently, some researchers have suggested that teachers might provide corrections that are out of step with students' stages of grammatical acquisition, rendering many of the corrections useless (Truscott, 1996; Yates & Kenkel, 2002).

What is generally missing from these discussions is consideration of the role that personal factors, such as learning style and personality type, might play in the utility of error correction. Are we to assume that all students—regardless of their preferred ways of learning—will respond to error correction with equal success or failure? In their debate about the utility of error correction in the improvement of L2 writing, Truscott (1996, 1999) and Ferris (1999) appeared to acknowledge, at least implicitly, that more research needs to be done in these areas. Writes Ferris (1999), "For a variety of reasons (including different learning styles, which are rarely considered in discussions of error correction…some students will respond better to grammar correction than others will" (p.

7). For his part, Truscott (1999) appears to agree about this point, writing, “Ferris is certainly right that interesting questions remain open” (p. 121).

One issue deserving investigation is the potential influence of personality type upon the effectiveness of error correction of L2 writing. Often research about personality type borrows much from the theories of psychologist C.J. Jung (1971), in which personality is understood as having one of two primary types, complemented by two of four mental functions. Although a personality may contain traces of all of these, some types and functions will dominate thinking and behavior. Jung’s model operates with dichotomies. An individual’s overall personality type draws an element from each of the following dichotomies: Introvert or Extrovert, Sensing or Intuition, and Thinking or Feeling. While developing an instrument to discover personality type, Katherine Briggs and Isabel Briggs Myers expanded Jung’s original theory of personality type to include a fourth dichotomy, Judging or Perceiving.

The resulting instrument—the Myers-Briggs Type Indicator (MBTI)—attempts to identify one’s personality type from a range of 16 possibilities. Personality type is represented by four capital letters, with each letter standing for a dominant element from a dichotomy. Hence, someone with the personality type ISTJ would have depth of concentration (I), reliance on facts (S), logical analysis (T), and focus on organization (J) (Myers, McCauley, Quenk, & Hammer, 2003).

Each element of the four dichotomies is summarized below:

- Introversion/Extroversion. An introvert tends to be motivated by contact with ideas, whereas an Extrovert is motivated more by contact with other people.

- Sensing/Intuition. A Sensing person tends to focus on practical, measurable outcomes, whereas an Intuitive type is probably more interested in creative possibilities.
- Thinking/Feeling. A Thinking person is more likely to base decisions upon objective, logical analysis of facts, whereas a feeling type is more apt to consider social values and relationships.
- Judging/Perceiving. A Judging person tends to focus more on planning and making immediate decisions, whereas a Perceiving type is more concerned with studying new information for more possibilities.

For someone learning about the MBTI for the first time, the acronyms representing the 16 personality types can look like an alphabet soup. Provided in Table 1 below is a brief summary, based upon descriptions within the MBTI manual, of important personality traits for each of the 16 types (Myers, McCaulley, Quenk, & Hammer, 2003).

Table 1
Summary of the 16 MBTI Personality Types

INFJ Enhanced concentration, understanding of possibilities, sympathy, and organization	ENFJ Enhanced range of interests, understanding of possibilities, sympathy, and organization
INFP Enhanced concentration, understanding of possibilities, sympathy, and flexibility	ENFP Enhanced range of interests, understanding of possibilities, sympathy, and flexibility
INTJ Enhanced concentration, understanding of possibilities, logic, and organization	ENTJ Enhanced range of interests, understanding of possibilities, logic, and organization
INTP Enhanced concentration, understanding of possibilities, logic, and flexibility	ENTP Enhanced range of interests, understanding of possibilities, logic, and flexibility
ISFJ Enhanced concentration, use of facts, sympathy, and organization	ESFJ Enhanced range of interests, use of facts, sympathy, and organization

Table 1
Summary of the 16 MBTI Personality Types (Continued)

ISFP Enhanced concentration, use of facts, sympathy, and flexibility	ESFP Enhanced range of interests, use of facts, sympathy, and flexibility
ISTJ Enhanced concentration, use of facts, logic, and organization	ESTJ Enhanced range of interests, use of facts, logic, and organization
ISTP Enhanced concentration, use of facts, logic, and flexibility	ESTP Enhanced range of interests, use of facts, logic, and flexibility

The MBTI appears in several forms. Form G—the 93-item instrument used in this study—has been available to researchers and practitioners for several years and has a research base supporting its validity and reliability (Myers et al, 2003). Based upon a database of over 32,000 test takers, its split-half correlations for dichotomies E-I, S-N, T-F, and J-P range from .82 to .86. Test-retest correlations for over nine months range from .59 to .70. Hence, the reliability is reasonably strong. Although the validity of the factor structure among preference scales of the MBTI item pool has been questioned by some researchers (Comrey, 1983; Sipps, Alexander, & Friedt, 1985), many others have found evidence supporting it (Harvey, Murry, & Stamouslis, 1995; Thompson & Borrello, 1986; Tischler, 1994; Tzeng, Outcalt, Boyer, Ware, & Landis, 1984). The results have prompted the MBTI developers to conclude:

> Although additional confirmatory studies need to be conducted to demonstrate the generalizability of the above findings, there is no question that the results of the factor analytic studies reported over the past 10-year period have been very supportive of the validity of the four-scale structure of the MBTI. (Myers et al, 2003, p. 173)

Perhaps most convincing of all, a comparison of MBTI types with self-estimates of personality type has revealed a surprisingly high rate of agreement with different population groups. Among seven separate, large-scale studies that included at least 200 participants, researchers found that the percentage of agreement ranged from 58% to 82% (Myers et al, 2003, p. 197).

More specific to our field, studies in second language teaching have discovered evidence supporting the MBTI's relevance as a research tool. A study by Moody (1988) among 491 US undergraduates found that foreign language majors tended to be Introverted, Intuitive, Thinking, and Perceptive. These findings were similar to the results of Ehrman & Oxford (1995) in their studies of 855 US government employees involved in intensive foreign language training. Like Moody, they had a concentration of foreign language students in the Introverted, Intuitive, and Thinking elements. However, unlike Moody, they found more Judging than Perceptive elements.

Some evidence—based upon a comparison of MBTI results with the Strategy Inventory for Language Learning (SILL)—suggests that personality type may influence the selection of learning style strategies (Ehrman & Oxford, 1990). For example, Introverts appear to learn best alone, to prefer reading and writing activities, to dislike unexpected activities in class, and to prefer to plan their activities. Intuitive types prefer to impose their own structures on learning, to search for broader meaning among details, to learn from context, and to learn independently. As for Thinking types, they tend to prefer analytically structured lessons, to avoid social interaction during lessons, to need to control their own learning, and to have some detachment from others.

Some researchers have established a connection between MBTI type and L2 writing performance. According to Carrel & Monroe (1993) in their study of 87 students (including 25 ESL students), Thinking types tended to perform better on essays that were holistically graded. They also wrote more and what they wrote was more syntactically complex. Likewise, Judging types tended to write with greater syntactic complexity. On the other hand, Intuitive, Feeling, and Perceptive types showed more lexical diversity in their writing. From these results, the researchers concluded that Thinking types enjoy an advantage in a more traditional writing class in which organizational skills are important. However, more flexible, innovative instruction could promote vocabulary acquisition, as reflected by the performances of the Introverted, Feeling, and Perceptive types in this realm.

What is currently missing from the literature is a study of how personality type might affect the utility of error correction regarding L2 writing. This is the focus of our study.

Research Method

Three research questions guided this study:

1. What personality types are there among the Taiwan undergraduate students of National Tsing Hua University who are majoring in English and are enrolled in an EFL writing class?
2. Do some personality types prefer error correction of their writing while others do not?
3. Do some personality types benefit more in their writing from error correction than other personality types?

To find answers to these questions, this study implemented the following research procedures. A total of 140 undergraduate English majors attending National Tsing Hua University of Taiwan were assigned to eight sections of a two-semester, third-year writing course. Each term lasted for 16 weeks, for a total of 32 weeks for the course. The purpose of the course was to teach students important skills about academic research writing, such as how to draft research papers, article reviews, book reviews, film reviews, and the like. During the two-semester course, students received several formal writing assignments, totaling at least 30 typewritten pages of writing per semester. These assignments were reviewed by peers and by the teacher-researcher, who is the first author of this paper, at least once before being submitted for a final grade. In addition to the more formal, typewritten papers, each student wrote four two-hour, in-class essays per term. Although primary emphasis for grading and feedback on all papers was placed upon focus, organization, content, logical analysis, and coherence, they were also carefully examined by the teacher-researcher, a native speaker of North American English, for errors in grammar, spelling, punctuation and diction. Whenever necessary, the teacher-researcher consulted with popular reference books about the grammatical acceptability of problematic sentences (Azar, 1999; Celce-Murcia & Larsen-Freeman, 1983). With the reference materials as a helpful guide, the teacher-researcher carefully circled or underlined every grammar, spelling, punctuation and diction error found within each paper. Although time consuming, this procedure was followed throughout the study for every rough draft or final paper submitted to the teacher-researcher for formative or summative evaluation.

There were approximately 18 students assigned to each section by the university Registrar's Office. Therefore, the researchers had no control over the assignment of students to each section and the university did not specifically select students for inclusion in this study. As a result, on the first day of class, each student signed a consent form to participate in the research. All of the students agreed to participate.

During the first two weeks of the first semester, several sources of data were collected from the students. In one class session, students completed Form G of the Myers-Briggs Type Indicator (MBTI) and Form P of the Michigan Test of English Language Proficiency (MTELP). The MBTI provided information about the personality type of each student and about the distribution patterns of personality types for the 140 students as a group. The MTELP was administered to ensure that participants of the study would be able to understand the directions and the items of the MBTI. Only those students who received an adjusted score on the MTELP of at least 80—reflecting the ability to take up to three-fourths of the normal undergraduate academic load at the University of Michigan—were included in the reporting of the study.

A part of the Michigan Test Battery, the MTELP is a well-established, 100-item comprehensive test of English reading, grammar, and vocabulary ability (English Language Institute, 1977). The Michigan Battery correlates well with the TOEFL, with reported correlation coefficients ranging between .77 to .94. As for its split-half reliability coefficient, it ranges between .89 to .97.

Within the first two weeks of the first term, students wrote 90-minute in-class essays about their opinions concerning error correction of English writing. To ensure that the students were free to express their views, the teacher-researcher refrained from

expressing opinions about this issue throughout the course. The essays were collected and kept by the teacher-researcher as a diagnostic assessment of each student's writing ability. Moreover, the papers became a source of data for the study. At the end of the second term of the study, the students wrote an in-class essay using the same essay prompt as the first in-class essay. The purpose of this repetition, using a pre-test/post-test format, was to assist the researchers in the comparison of responses over time and to determine improvements in writing ability during in-class timed writing. The essay prompt appears as follows: "Which do you prefer: (1) that your errors in English writing are corrected by someone else or (2) that your errors in English writing are not corrected by someone else?"

The first and last in-class essays were carefully examined by the teacher-researcher for the presence of any grammar, spelling, punctuation, or diction errors. To assist in making comparisons of results, each essay received a score of Errors per 100 Words. In an effort to double-check the appropriateness of the teacher-researcher's error assessment, 50 essays were randomly selected from each administration and sent to two outside raters, both of whom were native speakers of North American English with at least five years of tertiary-level English teaching experience. With the assistance of relevant reference materials about grammar (Azar, 1999; Celce-Murcia & Larsen-Freeman, 1983), and after discussing with the teacher-researcher and with each other about the study and about how to identify errors, the outside raters combed through each essay independently, circling or underlining any errors found. The raters had little difficulty identifying the same kinds and numbers of errors. The inter-rater reliability of the three raters for Errors per 100

Words among 50 of the first essays was high, as shown in the 2-tailed Pearson-R Correlations presented in Table 2.

Table 2
Inter-rater Reliability for 50 of the First Essays

Rater	No. of Essays	Mean	Std. Deviation	Pearson R
A	50	16.06	3.11	A-B .86
B	50	16.36	3.43	B-C .89
C	50	16.50	2.72	C-A .88

Correlation is significant at the 0.01 level (2-tailed)

Another 50 essays were selected randomly from among the 140 final essays. Once again, these were checked by the two outside raters to estimate the reliability of the teacher-researcher's identification of Errors per 100 Words for each paper. As with the first set of 50 essays, the inter-rater reliability for the second set of 50 was high. The results are presented in Table 3. The similarity between the teacher-researcher's counting of errors with those of the two other raters suggests two points. First, the identification of errors within the essays was a straightforward task. Second, the teacher-researcher's identification of errors was reasonably consistent.

Table 3
Inter-rater Reliability for 50 of the Final Essays

Rater	No. of Essays	Mean	Std. Deviation	Correlations
A	50	13.10	5.78	A-B .97
B	50	12.68	5.44	B-C .97
C	50	13.20	5.65	C-A .97

Correlation is significant at the 0.01 level (2-tailed)

At the end of the second term, in an effort to collect further evidence about how grammar ability changed during the course, students were given again the 40-item grammar section of Form P of the MTELP. This enabled the researchers, by using a standardized assessment of English grammar ability, to compare quantitatively changes in performance by personality type on the grammar section of Form P of the MTELP.

Likewise, the students—in their essays—shared their opinions about the utility of error correction for the improvement of English writing. Hence, this study collected and analyzed the following independent sources of data:

- Student distributions within the 16 MBTI personality types
- Errors per 100 words on the first and final in-class essays
- MTELP grammar scores at the beginning and the end of the course
- Opinions offered by the students on each of the in-class essays

Results

Regarding the first research question, this study found that there were several personality types represented among the 140 undergraduate English majors. In fact, every personality type of the 16 within the MBTI framework was represented. As Table 4 shows, the most common personality types were ISFJ, ISTJ, ESTJ, and INTJ. The least common were ESTP, ENFP and ENTP.

Table 4
Distribution of 140 Students among 16 MBTI Types

Type, Number, %	Type, Number, %	Type, Number, %	Type, Number, %
ISFJ 23 16.4%	ESFJ 13 9.3%	ISTP 06 4.3%	INTP 04 2.9%
ESTJ 18 12.9%	ISFP 08 5.7%	ESFP 05 3.6%	ENFP 03 2.1%
ISTJ 18 12.9%	INFP 07 5.0%	INFJ 05 3.6%	ESTP 03 2.1%
INTJ 15 10.7%	ENFJ 06 4.3%	ENTJ 04 2.9%	ENTP 02 1.4%

Pearson Chi-square value is 72.57, degrees freedom 15, level of significance 0.00

As for the second research question, we found that error correction preferences among these undergraduate English majors did vary by personality type. According to the results presented in Table 5, most of the students, during the writing of their in-class essays, indicated a preference for error correction. However, there were some notable exceptions to this general trend. Most or all of the students classified as ISTJ, INTJ, ISTP, and INTP

expressed a clear preference against error correction.

Table 5
MBTI Types of 140 Students by Error Correction Preferences

Type/Number	Type/Number	Type/Number	Type/Number
ISTJ 18 +3, -15	ISFJ 23 +20, -3	ISFP 8 +6, -2	ENFP 3 +3, -0
INTJ 15 +2, -13	ESTJ 18 +15, -3	INFJ 5 +5, -0	ESTP 3 +3, -0
ISTP 6 +1, -5	ESFJ 13 +11, -2	INFP 7 +5, -2	ENTJ 4 +3, -1
INTP 4 +0, -4	ENFJ 6 +6, -0	ESFP 5 +4, -1	ENTP 2 +2, -0

- In the second line of each cell, the + symbol denotes a preference for correction, the - symbol denotes a preference against it

Regarding the third research question, this study discovered evidence suggesting that some personality types benefited more in their writing from error correction than others did. The results of the scoring of error corrections in the first in-class essays suggested that, at the beginning of this study, the students were of roughly equal ability by personality type. An examination of the Errors per 100 Words for the first in-class essays revealed the absence of statistically significant differences in error rates among the 140 students by personality type. The mean number of errors per 100 words was 7.01 with a standard deviation of 1.51. Applying the Kruskal-Wallis test for non-parametric data for chi-square results yielded a chi-square of 13.51 at 15 degrees of freedom. However, this was only significant at the 0.56 level. At the beginning of the study, according to the error rates per 100 words for the initial essays, there were no statistically significant differences among the 16 personality types.

An examination of the Errors per 100 Words for the final in-class essays revealed a different situation. As presented in Table 6, a simple examination of the distribution of mean errors per 100 words among the 16 personality types on the final essays illustrates

that, even without tests for statistical significance, there were important differences between the mean error scores of INTJ, INTP, ISTJ, and ISTP with the other 12 personality types.

Table 6
Comparison of Mean Errors per 100 Words on Final Essays by MBTI Type

Type	Mean	Standard Deviation	Number	Type	Mean	Standard Deviation	Number
INTP	8.68	0.98	04	INFJ	4.06	1.13	05
INTJ	7.43	1.69	15	ENFP	3.70	0.69	03
ISTP	7.20	2.15	06	ISFJ	3.62	1.76	23
ISTJ	7.11	2.30	18	ENFJ	3.25	1.04	06
ISFP	4.80	1.68	08	ESFJ	3.18	0.93	13
INFP	4.71	2.84	07	ESTJ	3.04	1.09	18
ENTP	4.60	0.71	02	ENTJ	3.03	0.96	04
ESTP	4.20	0.56	03	ESFP	2.92	0.84	05

Application of tests of significance confirmed the trend presented in Table 6. In contrast to the results among the 16 personality types on the first essays, there were statistically significant differences among the personality types on the final essays. On the final essays, the mean number of errors per 100 words was 4.77 with a standard deviation of 2.41. Applying the Kruskal-Wallis test for non-parametric data for chi-square results yielded a chi-square of 72.21 at 15 degrees of freedom. The level of significance was 0.00. Table 7 compares the results of the first and the final essays on errors per 100 words by MBTI type.

Table 7
Comparison of Total Mean Errors per 100 Words on First and Final Essays

	Mean	Standard Deviation	Chi Square	Degrees of Freedom	Level of Significance
First Essays	7.01	1.51	13.51	15	0.56
Final Essays	4.77	2.41	72.21	15	0.00

The Kruskal-Wallis test revealed the presence of statistically significant differences at the 0.00 level between errors per 100 words on the first and the final in-class essays, so

the next step was to apply the Siegel-Castellan formula to identify statistically significant differences between pairs of ranked means. These comparisons provide a clearer look at the patterns of difference among personality types. Table 8 shows the distribution of paired differences by personality type.

Table 8
Distribution of Differences in Errors per 100 Words by MBTI Type on Final Essays

Types by Significant Differences		
Type	No. of Differences	Location of Significant Differences
INTJ	11	ESTP, ESTJ, ESFP, ESFJ, ENFP, ENFJ, ENTJ, ISFJ, ISFP, INFJ, INFP
INTP	11	ESTP, ESTJ, ESFP, ESFJ, ENFP, ENFJ, ENTJ, ISFJ, ISFP, INFJ, INFP
ISTJ	11	ESTP, ESTJ, ESFP, ESFJ, ENFP, ENFJ, ENTJ, ISFJ, ISFP, INFJ, INFP
ISTP	10	ESTJ, ESFP, ESFJ, ENFP, ENFJ, ENTJ, ISFS, ISFP, INFJ, INFP
ESTJ	08	INTJ, INTP, ISTJ, ISTP, ISFP, INFP, INFJ, ISFJ
ESFJ	07	INTJ, INTP, ISTJ, ISTP, ISFP, INFP, INFJ
ESFP	06	INTJ, INTP, ISTJ, ISTP, ISFP, INFP
ENFJ	05	INTJ, INTP, ISTJ, ISTP, ISFP
ENTJ	05	INTJ, INTP, ISTJ, ISTP, ISFP
ISFP	05	ESTJ, ESFP, ESFJ, ENFJ, ENTJ
ENFP	04	INTJ, INTP, ISTJ, ISTP
ESTP	03	INTJ, INTP, ISTJ
INFP	03	ESTJ, ESFP, ESFJ
INFJ	02	ESTJ, ESFJ
ISFJ	01	ESTJ
ENTP	00	

As the data in Table 8 show, the largest numbers of differences in errors per 100 words between the first and final essays occurred among the personality types of INTJ, INTP, ISTJ and ISTP. Noted previously in Table 5, most of the students of these four personality types expressed a desire in their in-class essays not to receive error correction.

To provide an additional source of data about the students' development of grammar ability, we compared their first and final scores on the grammar section of the MTELP by

personality type. This evidence confirmed that some personality types benefited more in their writing from grammar correction than others did. The results of the first MTELP scores suggested that, at the beginning of this study, the students were of roughly equal ability by personality type. An examination of the MTELP scores for the first administration revealed the absence of statistically significant differences among the 140 students by personality type. The mean score of the first administration was 27.89 with a standard deviation of 16.89. Applying the Kruskal-Wallis test for non-parametric data for chi-square results yielded a chi-square of 15.18 at 15 degrees of freedom. However, this was only significant at the 0.44 level. At the beginning of the study, according to the grammar scores for the initial administration of the MTELP, there were no statistically significant differences among the 16 personality types.

An examination of the grammar scores for the final administration of the MTELP revealed a different situation. As presented in Table 9, a simple examination of the distribution of mean scores among the 16 personality types illustrates that, even without tests for statistical significance, there were important differences between the mean grammar scores of ISTJ, INTJ, INTP, and ISTP with the other 12 personality types.

Table 9
Comparison of Final MTELP Grammar Scores by MBTI Type

Type	Mean	Standard Deviation	Number	Type	Mean	Standard Deviation	Number
INFJ	34.20	01.30	05	ISFP	32.75	02.55	08
ESTP	34.00	01.70	03	ENFJ	32.50	02.07	06
ISFJ	33.74	02.03	23	ENTP	32.50	03.54	02
ENFP	33.67	03.20	03	INFP	32.43	01.81	07
ESFP	33.60	01.14	05	ISTJ	27.72	04.10	18
ENTJ	33.25	02.75	04	INTJ	26.27	02.31	05
ESFJ	33.23	02.52	13	INTP	25.50	03.42	04
ESTJ	33.11	02.22	18	ISTP	25.33	01.75	06

Application of the Kruskal-Wallis test for non-parametric data for chi-square results revealed the presence of statistically significant differences between the first and the final set of MTELP scores. A statistical analysis of the results of the MTELP, presented in the second line of Table 10, revealed the chi-square value of 74.58, which reflected statistically significant differences among the personality types at the 0.00 level. Table 10 presents the results of the both the first and the final administrations of the grammar section of the MTELP.

Table 10
Comparison of First and Last MTELP Grammar Scores

	Mean	Standard Deviation	Chi Square	Degrees of Freedom	Level of Significance
First Test	27.89	16.89	15.18	15	0.44
Final Test	31.25	03.96	74.58	15	0.00

As the Kruskal-Wallis test revealed the presence of statistically significant differences at the 0.00 level between grammar scores on the first and the final administrations of the MTELP, the next step was to apply the Siegel-Castellan formula to identify statistically significant differences between pairs of ranked means. These comparisons provided a clearer look at the patterns of difference among personality types. Table 11 shows the distribution of paired differences by personality type for the grammar scores of the MTELP. The largest number of differences in grammar scores occurred among the personality types INTJ, ISTP, INTP, and ISTJ. The students of these four personality types, as noted in Table 9, tended to score lower than did their counterparts of the other personality types. Once again, most of the students of these four personality types expressed a desire in their in-class essays not to receive error correction.

Table 11
Distribution of Differences in Grammar Scores by MBTI Type on the Final MTELP

Type	No. of Differences	Location of Significant Differences
INTJ	13	ESTP, ESTJ, ESFP, ESFJ, ENFP, ENFJ, ENTP, ENTJ, ISFJ, ISFP, INFJ, INFP, ISTP
ISTP	13	ESTP, ESTJ, ESFP, ESFJ, ENFP, ENFJ, ENTP, ENTJ, ISFJ, ISFP, INFJ, INFP, ISTJ
INTP	11	ESTP, ESTJ, ESFP, ESFJ, ENFP, ENFJ, ENTP, ISFJ, ISFP, INFJ, INFP
ISTJ	11	ESTP, ESTJ, ESFP, ESFJ, ENFP, ENFJ, ENTJ, ISFJ, ISFP, INFJ, INFP
ESTJ	05	ISFJ, ISTJ, ISTP, INTJ, INTP
ISFJ	05	INFP, ISTJ, ISTP, INTJ, INTP
ESFJ	04	ISTJ, ISTP, INTJ, INTP
ESFP	04	ISTJ, ISTP, INTJ, INTP
ENFJ	04	ISTJ, ISTP, INTJ, INTP
ENTJ	04	ISTJ, ISTP, INTJ, INTP
ISFP	04	ISTJ, ISTP, INTJ, INTP
ENFP	04	ISTJ, ISTP, INTJ, INTP
ESTP	04	ISTJ, ISTP, INTJ, INTP
INFP	04	ISTJ, ISTP, INTJ, INTP
INFJ	04	ISTJ, ISTP, INTJ, INTP
ENTP	02	ISTP, INTJ

In summary, this study discovered the presence of 16 MBTI personality types among the 140 students, with ISFJ, ESTJ, ISTJ, and INTJ the most common. The least common found in this population group were ENFP, ENTP, ESTP, ENTJ, and INTP. Among the personality types, ISFJ, ESTJ, ESFJ, and INFJ preferred to receive grammar correction of written errors whereas, generally speaking, the types INTJ, INTP, ISTJ, and ISTP did not. Regarding the improvement of writing through error correction, most personality types appeared to benefit from it, except for INTJ, INTP, ISTJ, and ISTP.

Discussion

Distribution of MBTI Personality Types

Investigation of the first research question found that, among the 140 Taiwan undergraduate English majors included in this study, all 16 MBTI personality types were present. The most common types were ISFJ (16.4%), ISTJ (12.9%), ESTJ (12.9%), and INTJ (10.7%). These results appeared to replicate the major findings of the study by Hwang & Hwang (1992), in which they administered the MBTI to 142 Taiwan undergraduate English majors. To our knowledge, this is the only other study of MBTI personality type among undergraduate English majors in Taiwan. In the study by Hwang & Hwang, the top-four personality types were ISTJ (40.8%), ESTJ (28.2%), ISFJ (12.0%), and ESFJ (5.6%). In their study, these four types accounted for 86.6% of the total number of English majors who took the MBTI. Although the percentage of students in our study with these four personality types was not as large (51.5%), it was still substantial. What is more, Hwang & Hwang found that 38.7% of their 142 Taiwan undergraduate English majors were Extroverts whereas 61.3% were Introverts. In our study of 140 Taiwan undergraduate English majors, we found that 38.6% were Extroverts whereas 61.4% were Introverts. The stability of these findings over time and with different groups provides evidence supporting the reliability of the MBTI, when administered with due care, as a measure of personality type among Taiwan's undergraduate English majors.

Although most of the undergraduate English majors of our study were concentrated in a few personality types, there was still considerable diversity. In their study of 142 Taiwan undergraduate English majors, Hwang & Hwang identified five personality types without any students: ENFJ, ENFP, INFJ, and INFP. Our study identified students belonging to each of the 16 personality types, but the ones without any students in the

study by Hwang & Hwang had very few students in our study. In our study, ENFJ accounted for 4.3%, ENFP 2.1%, INFJ 3.6%, and INFP 5.5%. In spite of the greater diversity uncovered in our study, it appeared to replicate, more or less, the general MBTI profile of Taiwan undergraduate English majors that were first identified by Hwang & Hwang.

Correction Preference by Personality Type

According to the results of our study, four personality types—INTJ, INTP, ISTJ and ISTP—expressed a clear preference against receiving error correction. (See Table 5.) Students of the other 12 types, with only a handful of exceptions, expressed their desire to receive it. This appears to be more than a mere coincidence. According to Myers et al (2003), these four types— INTJ, INTP, ISTJ, and ISTP—are classified as the Reflective Reasoners. They tend to be introverted, quiet, and thoughtful. Often, they are the slowest to develop their social skills, sometimes perceived by others as socially awkward. Furthermore, they often tend to be critical of others and their ideas. Because they are introverted, their body language may not correspond well with external events, compounding the problem. They may present others with a negative impression. Write Myers et al (2003), “As a result, they may be seen, often erroneously, as overly critical, disdainful, or, at best, uninterested in what is going on” (p. 59).

Given this profile of their MBTI personality types, it is not surprising, then, that most of these students might disregard the teacher’s attempts to correct their errors. Introverted and naturally critical of outside influences, they probably preferred to have as little input from the teacher as possible. These students, collectively, offered four primary reasons in their diagnostic essays for not wanting to receive error correction.

For starters, they believed that teacher corrections were unhelpful. In their opinions, grammar could be learned best through quiet, independent study of rules and examples, not through social interaction and teacher intervention. For them, correction was a kind of disruption of the natural learning process. Reasoned this ISTJ:

> One reason is that one cannot see the mistakes we have done due to the limited knowledge about the grammar usage. If we don't understand the rules, how can we understand the correction? We would only commit the same kinds of mistakes again and again, making the teachers feel dull and angry.

Second, they believed that it was their responsibility to learn—not the teacher's responsibility to teach—grammar usage. This made error correction unnecessary, even useless. In the words of this ISTP:

> Our teachers in junior high school and high school taught us a lot about grammar. We know the rules, though we don't always remember them when were writing. If I try to correct the error by myself, to find it by myself, I would have a deeper impression that this usage is wrong. On the contrary, if my grammar errors are corrected already, I would probably just skim the errors, and just let it go at that.

Third, some of these students were sensitive to the burden of error correction upon their teachers. Not only did they want to avoid receiving error corrections, but also they wanted to spare their teachers of the unpleasant work of correcting errors. As observed by this INTJ: "Our teachers mark up our papers, we forget to read them, we make the same mistakes again, and our teachers mark them up again. Bloody papers and bloody eyes!"

Fourth, some even doubted the ability of their teachers to mark effectively their errors. They preferred to work independently, to find their own way. Wrote this INTP:

> Professor [name deleted, from another class] often marks our mistakes. But he some times marks the wrong mistakes, corrects things that are right. This confuses me. It would be better letting me write alone. We got the grammar book so, we can look it up ourselves.

As the results of our study suggest, most of the Taiwan undergraduate English majors preferred error correction. However, among those who did not, a pattern emerged. Most of the students of four MBTI personality types—INTJ, INTP, ISTJ, and ISTP—expressed preference against error correction. In their views, error correction was not very helpful, it was their own responsibility to learn grammar rules, error correction was an unnecessary burden upon teachers, and teachers sometimes provided incorrect error corrections.

Benefits of Error Correction by Personality Type

The results of this study suggest that, as determined by errors per 100 words in essays and MTELP scores, error correction tended to help most students of most personality types. Nevertheless, there is evidence suggesting that the students of four personality types—INTJ, INTP, ISTJ, and ISTP—benefited from it significantly less than the students of the other 12 personality types. It is also important to point out that most of the students of these four personality types indicated a preference not to have their errors corrected. Receiving extensive error correction against their expressed preferences did not help them to improve.

Implications

This study offers some evidence suggesting that error correction can be helpful for the improvement of written English, but not for everyone. Personality type appeared to

contribute to the success or failure of error correction. In addition, students—as a rule—appeared to be aware of their own needs. When students indicated a desire to receive error correction or not to receive it, they were reflecting, at least in part, the needs of their personality type. Hence, when considering error correction, it would be appropriate for teachers to consider also the personality types of students as manifested through the expression of students' correction preferences. Refusal to consider the different needs of students by personality type might hinder academic achievement.

Although this study found evidence to suggest that error correction works for most yet not for some, it is important to bear in mind how more research needs to be conducted in this field. This study applied only one form of error correction, extensive underlining and circling of errors. Would it be possible that a different form of error correction, say, coded correction, might have yielded different results by personality type? How might different personality types respond to different types of error correction schemes? What other individual factors besides personality type, such as motivation or learning style, might influence the effectiveness of error correction? These questions await further exploration.

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