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The Effect of Feedback Medium on Accuracy with English Articles

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THE EFFECT OF FEEDBACK MEDIUM ON ACCURACY WITH ENGLISH ARTICLES

by

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ABSTRACT

Developing and demonstrating English proficiency is a critical skill for non-native English speakers (NNESs) who wish to study in American universities. Unlike their native English speaker (NES) counterparts, NNES students who apply for university admission are required to demonstrate their proficiency in English via tests, such as the Test of English as a Foreign Language (TOEFL), that measure an NNES's ability to understand, speak, read, and write English. Although the number of students who have attained those minimum scores is large, there is a large population of adult NNESs enrolled in intensive English programs (IEPs) that are designed to help them improve their proficiency in English and again admission into mainstream university courses. Given that many university instructors require the submission of written work that demonstrates students' understanding of course content, perhaps the most important academic skill developed in IEPs is writing. Furthermore, the lack of attention given to addressing grammatical errors at the tertiary level highlights IEP instructors' need for effective and efficient methods of addressing grammatical errors in NNES writing.

The present quantitative study used two experimental designs, a pretest-posttest design and a posttest-only design with proxy pretest (Campbell & Stanley, 1963), to investigate the efficacy of two types of indirect corrective feedback (CF) for improving adult, IEP-enrolled, intermediate level NNES writers' (participants) grammatical accuracy in academic papers. Grammatical accuracy for this study was measured by counting the number of errors participants committed when using English definite and indefinite articles in academic papers. The independent variable for this study was the type of CF participants were randomly selected to receive – either screencast corrective feedback (SCF) or written corrective feedback (WCF). The

dependent variable, which measured the effect of the CF given, was the number of errors participants made with English definite and indefinite articles on three compositions completed to satisfy the requirements of their IEP writing class.

The results of the current research demonstrated that participants made similar gains in grammatical accuracy when using CF to revise descriptive compositions. These results are in keeping with the results of previous studies that showed the usefulness of CF for improving grammatical accuracy on revised compositions (Bitchener, 2008, Bitchener & Knoch, 2008, 2009a, 2009b, 2010a). However, the improvement observed on the revised descriptive compositions did not transfer to new classification essays, regardless of the type of CF participants received. Participants' lack of grammatical accuracy on new compositions of a different genre effectively illustrated the difficulty English articles pose for NNESs when writing and the need for multiple exposures to CF and writing practice to develop NNESs' ability to consistently use English articles accurately.

The main implication of the present study lies in the recommendation of the provision of CF to NNES students and systematic instruction about how to use CF received in order to allow NNESs to become more self-sufficient learners and writers of English.

I dedicate this work to my Mom and Dad.

This accomplishment would not have been possible without your love and support, and I miss

you every day.

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him achieve his dreams.

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LIST OF ABBREVIATIONS & ACRONYMS

ACT	Adaptive Control of Thought
CALL	Computer Adaptive Language Learning
CF	Corrective Feedback
DV	Dependent Variable
EAP	English for Academic Purposes
eCF	Electronically-delivered Corrective Feedback
EFL	English as a Foreign Language
ESL	English as a Second Language
FDH	Fundamental Difference Hypothesis
iBT TOEFL	Internet-based Test Test of English as a Foreign Language
IELTS	International English Language Testing System
IEP	Intensive English Program
IV	Independent Variable
L1	First or Native Language
L2	Second Language
NES	Native English Speaker
NNES	Non-native English Speaker
PAD1	Paper A, Draft 1
PAD2	Paper A, Draft 2
PBD1	Paper B, Draft 1
SCF	Screencast Corrective Feedback

SLA	Second Language Acquisition
STEM	Science, Technology, Engineering, and Math
TL	Target Language
CCCC	Conference on College Composition and Communication
TOEFL	Test of English as a Foreign Language
WCF	Written Corrective Feedback

CHAPTER 1: INTRODUCTION TO THE STUDY

Developing and demonstrating English proficiency is a critical skill for non-native English speakers (NNESs) who wish to study in American universities. Unlike native English speaking students (NESs) who develop and hone their language skills from infancy, immigrant and international adult NNESs must refine their knowledge and ability to produce English in a comparatively short amount of time. Additionally, to be admitted to an American university, NNES students must demonstrate proficiency in English via tests that measure their ability to understand, speak, read, and write English, such as the Test of English as a Foreign Language (TOEFL). Minimum scores required for admission to tertiary institutions ensure that, if accepted, NNESs will be able to successfully participate in and complete coursework. Although the number of students who have attained those minimum scores is large, it is important to recognize that there is a large population of adult NNESs enrolled in English language classes designed to help them improve their proficiency in English and enroll in mainstream university courses.

Adult language learners enrolled in intensive English programs (IEPs) are not yet students at a tertiary institution, but attend language and culture classes offered through a university-sponsored program designed to prepare them for the rigors of American academia. IEP students are afforded the opportunity to improve their English language skills of listening, speaking, reading, and writing in a supportive environment, surrounded by students going through similar experiences as well as by instructors who are familiar with the particular needs and challenges associated with English language learning and the skills necessary for success in university courses (Chang, 2011). Access to such resources heightens adult NNESs' sense of

efficacy and belonging to academic communities (Chang & Kanno, 2010; Kanno & Norton, 2003) and provides the students with the opportunity to increase their English language proficiency.

Of the skills developed by university-sponsored IEPs, perhaps none is more critical to adult NNESs' academic success than writing. Many, if not all, instructors at the college and university level require their students to submit papers that indicate students' understanding of course content (Hall, 2001). However, written demonstration of a student's understanding of course content must also satisfy the rhetorical and linguistic expectations of instructors. Research conducted by Bartholomae (1986) and Holt (1997) demonstrated that failure to follow rhetorical conventions and the presence of grammatical errors on a writing assignment resulted in a lower grade. More current research has shown that undergraduate university instructors value organized, concise, and reasoned writing that demonstrates students' knowledge of Standard English (Huang, 2010), but that producing written English is a persistent challenge for NNESs (Silva, 1992; Bifuh-Ambe, 2009). In the interest of preparing their NNES students for success in university-level classes, then, IEP writing instructors must address *both* linguistic and rhetorical elements as they teach and assess writing.

It is important to recognize the dual focus of IEP writing classes and the impact addressing linguistic and rhetorical conventions has on those classes, particularly since both writing considerations may not be explicitly taught by university-level content class instructors or by the staff of university writing centers. University instructors who are concerned with presenting and assessing student knowledge of course material are unlikely to feel compelled to address or capable of addressing NNES students' writing issues and may, therefore, refer a

struggling NNES writer to the university writing center (Moussu, 2013). Recent publications by

Bell and Elledge (2008), Moussu (2013), and Nan (2012) suggest, however, that prevailing

process-oriented theories of writing pedagogy and North's (1984) influential notions about

writing centers influence writing center tutors to focus on the organization of a writer's ideas

rather than on grammatical errors. For the current study, the lack of attention given to addressing

grammatical errors at the tertiary level is of particular interest as it highlights IEP instructors'

need for effective and efficient methods of addressing grammatical problems in NNES writing.

Just as writing can be considered as a representation of rhetorical and linguistic elements

of a language, second language (L2) writing instruction can be considered a practice that

combines ideas from the fields of first language (L1) writing and second language acquisition

(SLA); these two disciplines influence the approaches and techniques used by IEP writing

instructors in their classes to develop NNES students' rhetorical style and grammatical accuracy

in English (Bitchener & Ferris, 2012). One influential notion from the field of L1 composition is

the process-oriented approach to writing instruction. This approach directs composition

instructors, including contemporary IEP writing instructors, to place emphasis on the writing

process, rather than on the *product*, or text, created by students (Ferris & Hedgcock, 2005;

Fulford, 2009; Lee, 2006). For example, in *Patterns for College Writing*, which was written for

post-secondary NES students, Kirszner and Mandell (1995) insisted that text production can be

facilitated if the student authors progress through a series of writing stages which enable them to

develop content and accuracy as they write and revise their work. The process-oriented

approach to writing instruction, then, has had an impact on writing pedagogy for many years.

Recent research conducted by Olan (2012) confirms that today's preservice teachers are being trained to use process-oriented approaches to writing instruction.

For the current study, the acknowledgement and treatment of student writers' errors inherent to the process-oriented approach to writing is of particular interest. It is expected that writers will make errors as they produce a text, and the reception of corrective feedback (CF) is designed to enable writers to improve aspects of their writing, including linguistic accuracy. Although the type and frequency of grammar errors encountered in L1 writing has been shown to be distinct from those evidenced in L2 compositions (Doolan, 2014), NES and NNES students, by virtue of process-oriented approaches to writing used in their respective educational contexts, should be able to use CF to improve linguistic features in their compositions. Curiously, the need for and usefulness of CF advocated in process-oriented approaches of L1 writing pedagogy has been downplayed by certain SLA theories.

Although there are multiple theoretical viewpoints from the field of SLA that can influence L2 writing instructors, for the purposes of the current study, attention will be given to the Natural Approach and cognitivist theories because of their conflicting perspectives about the need for CF to treat language learners' errors. The Natural Approach to language teaching calls on teachers to increase students' exposure to comprehensible input when they make errors so that students may infer the rules for proper language use from the input (Krashen & Terrell, 1983). This perspective on language teaching and learning considers the acknowledgement of learner error and correction thereof as unnecessary. Although the Natural Approach as proposed by Krashen and Terrell (1983) focuses on oral production, its tenets have been extended and applied to discussions about the effect of target language input on L2 writing development (Casanave,

2004; Truscott, 1996, 2007). The results of published research have shown that target language input alone can help L2 writers improve certain linguistic aspects of their compositions, although its effectiveness for improving grammatical accuracy is limited (Perez-Vidal & Juan-Garau, 2011; Sasaki, 2004, 2007, 2011; Truscott & Hsu, 2008).

In contrast to the Natural Approach, cognitivist theories advocate explicit rule instruction and the use of corrective feedback to increase learners' awareness of gaps in their knowledge to improve their target language proficiency (McLaughlin, 1987; Pienemann, 1998). A cognitivist approach to SLA considers CF to be a useful tool for helping students acknowledge and correct errors in their target language production. Cognitivist notions about language teaching and learning have inspired a great deal of research, including studies that investigated and demonstrated the usefulness of corrective feedback for improving L2 writers' grammatical accuracy (Ashwell, 2000; Bitchener & Knoch, 2008, 2009a, 2010a; Chandler, 2003; Ferris 2006). Despite these results, L2 writing instructors may still be uncertain about whether or not to provide CF to their students because it is not clear what type of CF is most effective for treating students' grammar errors. This lack of clarity can be attributed to inconsistencies in the research, particularly with respect to studies' designs and measurements (Guénette, 2007). For example, whereas Bitchener and Knoch (2008) analyzed ratio data to determine the effect of four types of CF on NNES writers' accuracy when using English articles, Sheen (2007) investigated the effect of just two types of CF for improving NNESs' article accuracy using three different productive language tests. These two studies, as well as others discussed in detail in the next chapter, illustrate the different approaches and measures used to determine whether CF on grammar errors should be given and how effective different types of CF are for increasing L2 learners'

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grammatical accuracy. Additionally, the evidence that input-only instruction can help some

learners improve their writing cannot be ignored. Thus, the lack of consistent, conclusive

evidence for or against the provision of corrective feedback to L2 writing students has impeded

researchers from reaching a consensus about whether or not to provide corrective feedback to L2

learners and what the best methods are for addressing learner's grammatical errors.

For IEP writing teachers who are trying to produce the greatest possible proficiency gains

in the shortest amount of time, the lack of definitive evidence for or against the provision of CF,

as well as the myriad of CF possibilities, makes it difficult to determine what constitutes best

practices. Moreover, the majority of studies upon which instructors may be basing their

decisions have focused on oral, written, and computer-delivered (e.g. word processing program)

CF but these are not the only media that can be used to deliver corrective feedback to writers.

Today's technological advancements allow instructors to offer an alternative type of feedback:

screencasts, or "digital video-recordings of a computer's on-screen activities" (Séror, 2012,

p.106) that can also include audio narration. Exploring this feedback possibility is merited

because technology has become an important part of the lives of university students in America.

Computers are undeniably important to today's postsecondary students. In 2003 the U.S.

Department of Education's National Center for Education Statistics reported that 84.9 % of

college students have access to a computer at their tertiary institution and 81.6 % of those

students have access to a computer at home (Snyder & Dillow, 2011, p. 40-41). Additionally,

92.8 % of undergraduates surveyed indicated that they use computers to work on academic

assignments (Snyder & Dillow, 2011, p. 39). Technology is, therefore, a large part of the lives

of American undergraduate students and could, by extension, be an important aspect of adult IEP

students' lives, too. Second language writing instructors could use students' familiarity with computers to enhance their teaching, including providing corrective feedback on students' written work. Screencasts can be sent to students via e-mail, thereby allowing writing instructors to deliver corrective feedback to their students in a familiar medium. This technology, however, has not been extensively investigated empirically for effectiveness.

The current study, which was influenced by cognitivist theories of SLA, provides information about the efficacy of two specific types of CF for improving NNESs' errors when using English definite and indefinite articles. Although the study does not resolve the debate about whether or not to provide NNESs with CF to help them improve their written English production, it does inform researchers, teachers, and administrators about the comparable effectiveness of two particular types of CF for improving grammatical accuracy, one of which has not been extensively researched. The potential for CF to improve adult NNESs' written grammatical accuracy, coupled with the lack of research examining the effectiveness of screencasts and the popularity and extensive use of technology by university students today, provide the justification for the research conducted for this dissertation.

Statement of the Problem

In order to gain admittance and to succeed in American universities, one of the most important skills NNESs must develop is their ability to produce grammatically accurate writing in English. The process-oriented approach to writing allows NNES learners to consider and incorporate changes to their writing based on the feedback they receive, but research conducted on the effectiveness of providing corrective feedback within the field of SLA has predominately concentrated on written corrective feedback (WCF). Because today's students spend several

hours per week using technology to complete their assignments, it is possible that screencasts may be an effective means of delivering corrective feedback about grammatical errors to adult NNESs. There is a gap in the knowledge about this feedback option because the published research on screencast feedback has not been quantitative or exclusively focused on how NNESs can use screencasts to improve their grammatical accuracy. Research is needed that will elucidate the effectiveness of screencasting for improving grammatical accuracy and that will compare this new CF option to traditional WCF.

Research Questions

Data gathered for the current study allowed the researcher to answer the following research questions:

1. Is researcher-generated CF delivered via screencast more effective than researcher-generated CF delivered via pen-on-paper for improving NNESs' accurate use of English definite and indefinite articles on revised compositions?

2. Is there evidence of learning from researcher-generated CF, as measured by comparing the number of errors with English definite and indefinite articles from Paper A, Draft 1 (PAD1) to Paper B, Draft 1 (PBD1)?

3. Is researcher-generated CF delivered via screencast more effective than researcher-generated CF delivered via pen-on-paper for improving NNESs' acquisition of English definite and indefinite articles, as measured by comparing the number of errors from PAD1 to PBD1?

Delimitations

The current study was designed to provide researchers, teachers, and administrators with information about two types of CF when used to correct intermediate-level, adult NNESs' written errors with English definite and indefinite articles. Although previous studies provide insight about the ability of WCF to help NNESs correct article errors, the efficacy of screencast CF (SCF) for helping these students improve their use of English articles is unknown because it has not been overtly researched. It is also unknown how effective SCF is for treating article errors compared to WCF. To address this gap in the literature, the study compared the efficacy of one instance of pen-on-paper and screencast-delivered indirect, metalinguistic CF for improving intermediate-level adult NNES students' accuracy using definite and indefinite English articles in academic writing.

The parameters of the study were established to allow the researcher to conduct a practical investigation that contributes to the discussion about the potential of CF to improve the grammatical accuracy of NNESs' written production in English. The researcher, a language teacher who uses CF with her own students, was interested in demonstrating the potential of CF to help students improve their grammatical accuracy and in gaining a better understanding of the durability of improvements observed. As a language instructor, the researcher has used both WCF and SCF with her students. Those students who received screencast feedback responded positively to it, but these subjective reactions did little to inform the researcher about actual improvements made and whether or not students retained their ability to write more accurately. The decision to concentrate on article errors encountered in NNES writing was made after the researcher had reviewed published studies about the ability of CF to improve this problematic

aspect of NNESs' written production. Although it may be more common for L2 instructors to provide unfocused CF (e.g. feedback that addresses many types of writing errors) on student papers, consideration of multiple grammar errors for this study would have increased the number of participants needed and the number of factors to consider when interpreting the results. In the interest of conducting focused, informative, and practical research, then, it was decided that the focus of the study should be English article errors. This emphasis enabled the research to contribute to and forge a new path in an existing body of knowledge.

Working with adult participants at an intermediate level of English proficiency who were enrolled in an IEP was another feature designed to enhance the practicality of the research. The participant parameters established for this study allowed the researcher to reduce the number of compounding factors that needed to be analyzed, thereby sharpening the focus of the research and the conclusions drawn. Furthermore, working with NNESs enrolled in an IEP increased the researcher's confidence that the participants in the study would be interested in improving their academic writing because it would allow them to improve their English proficiency test scores and enroll in mainstream university courses. Had participants come from informal or conversational English as a second language (ESL) classes offered in the community, it is possible they would not have been interested in improving their grammatical accuracy when writing English. Participants enrolled in English for academic purposes (EAP) classes were also not considered for the study because this group of NNESs would already have gained entry into an American university and would be focused on developing the English skills necessary for success in a specific field of study. The data obtained, therefore, provide a preliminary basis of

comparison for the two feedback types on one particular type of grammatical error for NNESs

enrolled in an IEP at a particular proficiency level.

The conclusions drawn from data analyses can be used to inform teachers' and

administrators' determination of best teaching practices for treating article errors in adult,

intermediate-level NNES texts. Additionally, the study provides insight into the time-consuming

nature of language learning, information that can be used to develop more effective IEP curricula

and expectations for adult NNES learners.

Limitations

As with any research, this study has particular limitations because of its design, sampling,

and data collection procedures. Because the participants were enrolled a class designed to

improve their use of written English, there was the possibility of an interaction between selection

and maturation. Specifically, it is possible that any increase in participants' written grammatical

accuracy observed would have occurred even without treatment, but that these gains were

mistaken as an effect of treatment (Campbell & Stanley, 1963). It is also possible that any

increase in accuracy measured was the result of an interaction between testing and treatment,

particularly since the instructor may have focused more attention on writing accuracy than they

would if their students were not participants in the study (Campbell & Stanley, 1963). The use

of convenience sampling was another limitation of the study because the subject characteristics

may not generalize to the larger population of adult NNES learners enrolled in IEP courses in the

United States or worldwide.

The duration of the study was another limitation. The differential effects of traditional

WCF and SCF were only considered during one seven-week term of the IEP writing courses in

which participants were enrolled. This means the data collected was not be longitudinal in nature and, therefore, it was not possible to determine if any gains in accuracy seen during the study duration were maintained in participants' other courses. Finally, the selection of one grammatical feature to measure accuracy limited the conclusions that were drawn from the research. While the study produced evidence of the impact of corrective feedback on participants' use of English definite and indefinite articles, it did not provide information about other types of errors evidenced in their writing and the ability of instructors to effectively address those errors in their corrective feedback.

Definition of Terms

The following definitions are provided to the reader to ensure clarity.

Corrective Feedback (CF) –comments or corrections about errors in students' target language production.

Direct Feedback – corrective feedback that gives the correct form for a student (Ellis, 2008).

Electronically-delivered Corrective Feedback (eCF) –corrective feedback that is delivered through electronic means including audio recording, video recording, or screencast.

English as a Second Language (ESL) - English is a communicative tool employed regularly to communicate with others because the student is learning the language in an English-speaking environment

English for Academic Purposes (EAP) – A program of English instruction that combines language instruction with professional skill development for non-native English speakers at the postsecondary level.

First Language (L1) – a person's native or dominant language

Focused Feedback – CF that addresses one error type.

Foreign Language – A language that is learned in an educational setting, such as a classroom, and which is not used to communicate with others outside of the classroom setting.

Indirect Feedback – Corrective feedback that indicates that an error exists but that does not provide a correction to the student (Ellis, 2008).

Intensive English Program (IEP) – A formal program of courses that provide English language learners with opportunities to learn the language skills needed to gain enrollment in a tertiary institution.

Linguistic Elements or Features – Those language features that pertain to a language's grammar, morphology, and lexis.

Metalinguistic Feedback – Corrective feedback that alludes to the rules governing correct language use.

Non-Native English Speakers (NNESs) – adult English language speakers for whom English is not the first language.

Rhetorical Elements or Features – The organization and presentation of ideas in a piece of writing.

Screencast - "digital video-recordings of a computer's on-screen activities" (Séror, 2012, p.106) that can also include audio narration, which can be sent to students via e-mail.

Second Language (L2) – "any language other than the first language" (Ellis, 2008, p. 5) that is used to communicate with others in institutional and social settings.

Second Language Acquisition (SLA) – the study of the processes involved when learning a language and the factors that influence those processes.

Target Language (TL) – The language being studied.

Treatable Errors – Errors that violate specific target language rules and for which students may receive a reminder of the rule being violated (Ferris, 2011).

Unfocused Feedback – CF that addresses two or more error types.

Untreatable Errors – Errors that are idiosyncratic in nature and for which students cannot be reminded of a prescriptive target language rule (Ferris, 2011).

Written Corrective Feedback (WCF) –written comments on student-produced texts that are intended to enable students to make corrections to their texts that improve the students' mechanics and communication.

Summary

Today's adult learners, including NNESs, are proficient users of technology, and their instructors may find it useful to deliver their feedback on assignments to students in a way that acknowledges this technological proficiency. For L2 writing instructors who have a limited amount of time to help students improve their grammatical accuracy, screencasts may be an effective way to deliver CF about grammar errors. Although there is evidence that CF helps NNESs to improve their written grammatical accuracy, it is unknown whether screencasts are as effective as traditional pen-on-paper CF for achieving this objective. Not only did the proposed study contribute to the existing knowledge about the use of CF to improve grammatical accuracy with English articles and durability of gains that may be expected, it also empirically validated screencasts as a comparable method of delivering indirect, metalinguistic corrective feedback to NNES students and improving their English writing proficiency.

CHAPTER 2: LITERATURE REVIEW

Introduction

The focus of this study is on improving non-native English speakers' (NNESs) writing through the correction of sentence-level errors. This topic was selected because writing is important for scholastic success and because it has been reported that professors in tertiary institutions value accurate writing. For this study, it was determined that accuracy should be considered at the sentence, rather than at the word, level because within the field of applied linguistics, accuracy is operationalized as the ability to produce grammatically correct sentences (Aliakbari & Toni, 2009), and also because errors committed at the sentence level are easily detected (Leki, 1992). Unlike first language (L1) learners, whose language proficiency is developed sequentially over an extended period of time, second language (L2) learners grapple with the concurrent demands of mastering both oral and sentence-level writing as they learn the target language. If the objective of an L2 language curriculum is to develop students' oral and written communication skills, which includes grammatical accuracy, in a limited amount of time, then it would be wise to implement best practices to reach these objectives.

The present chapter reviews theories and research related to the importance of writing, approaches to L2 writing instruction, and the provision of corrective feedback (CF) on L2 learners' compositions within the field of second language acquisition (SLA). Following a discussion of the research attesting to the difficulty of writing for adult learners, an overview of the theoretical perspectives about writing instruction is presented, followed by a review of research related to each notion. Research about written CF (WCF) given to adult L2 learners from both the SLA and L2 writing perspectives is covered, as well as research into feedback

delivered via electronic means. The chapter concludes with a discussion of the rationale for the current study.

Writing in Education

The ability to write is important for students of all ages. Elementary school children write book reports to evidence their understanding of stories they have read, and high school students learn to express opinions about themes in literature, to write scientific lab reports, and to demonstrate more complex consideration of class content in their written work. For university students, writing about a topic is one way to demonstrate comprehension, analysis, and personal engagement with content (Kirszner & Mandell, 1995). It is important to note that *writing* can take many forms –students may write single-word answers to demonstrate their knowledge of particular vocabulary or word forms or lengthier passages to evidence their engagement with a topic. The task of composing a longer piece of writing is time-consuming and involves the incorporation of several different skill sets. Writers must not only know the rules governing a language, they must also demonstrate that knowledge to create a text that is accurate and cohesive to be effective (Singer & Bashir, 2004). Producing a piece of writing can, therefore, be difficult for native and non-native speakers of a language alike.

For students, one inescapable result of submitting written work is that it will be assessed and graded. Failure to demonstrate both linguistic and content knowledge can have substantial consequences for students. In fact, Warriner (1988) stated that learning to communicate ideas is the most important learning objective in education and, conversely, that "if you are unable to communicate what you know, you are severely limited" (p. ix). This is all the more true for post-secondary learners who may complete writing assignments as required for courses they are

taking to advance their education and professional development. Beason (2001) found that written errors, including syntactic errors, affected a writer's credibility as perceived by business professionals. Reviewing the published research allows us to better understand the difficulties of writing for adult L2 writers as well as how course content can affect how much linguistic and rhetorical instruction is provided to this particular population of writers. Familiarization with the amount of linguistic and rhetorical instruction offered in an L2 writing class can help us understand how important these categories are to determining the grade a student receives on their written work. Although assessment practices vary from instructor to instructor, it is possible to categorize the elements that affect their consideration of a student's work as being either linguistic (e.g. grammar-based) or rhetorical (e.g. organizational) in nature. The importance of these two elements has been confirmed by research.

Huang (2010) surveyed undergraduate and graduate students ($n = 432$) and their professors ($n = 93$) to determine what each group felt was needed to successfully complete required writing assignments. The study was conducted at a medium-sized Canadian university across four different departments (Humanities, Social Sciences, Physical Sciences, and Life Sciences). The online questionnaire asked the students and instructors to rate skills on a scale from 0 (*I/They do not need to perform this task*) to 5 (*Extremely important*). The researchers then compiled and averaged the skill scores within groups. The instrument used was pilot tested and assessed for reliability, an aspect which strengthens the results of the study. Unfortunately, Huang (2010) did not indicate how many respondents were native English speakers (NESs) or NNESs, so it is impossible to determine if the responses reflect the attitudes of predominantly one group of students or the other. Nonetheless, the study reported interesting results.

Based on the data obtained from completed questionnaires, Huang (2010) found that both undergraduate and graduate students and instructors considered using the conventions of standard written English and textual organization to be "very important" (Huang, 2010, p. 517) to their success as writers. Interestingly, the researcher found that despite an awareness of the importance of these textual features, the students and instructors differed considerably in their need for help with them. For instance, only 12.6 % of the graduate students reported needing help with using standard written English, but nearly 50 % of the graduate instructors indicated that their students needed help with this feature (Huang, 2010, p. 530). Similar results were found with undergraduate students and their instructors: 14.9 % of undergraduates indicated they needed help with standard written English whereas almost 60 % of their instructors indicated this was an area in need of improvement for student writers (Huang, 2010, p. 530). Huang's (2010) data indicated that despite having an awareness of the importance of proper spelling, grammar, syntax and punctuation, students may not realize how many of these types of errors they commit when writing. Given that other studies have shown that NNESs are interested in producing texts that are as error-free as possible (Bitchener & Basturkmen, 2006; Burke & Wyatt-Smith, 1996), it is possible that the students who did report needing help with standard written English in Huang (2010) were NNESs.

The data reported by Karathanos and Mena (2014) supported the findings of Huang (2010). After analyzing survey data collected from 202 undergraduate and graduate students enrolled in the College of Education at San Jose State University, the researchers found that the NNESs ($n = 75$) felt they needed the most improvement in grammar and mechanics when writing. Additionally, 41% of the NNES participants in this study reported that the feedback

they received from their instructors focused most often on grammatical issues, a finding that further supports Huang's (2010) conclusion that adhering to the conventions of standard written English is an important skill at the tertiary level.

Second-language learners' concerns about the effect of accuracy on their texts have been reported by other researchers. The qualitative data reported by Silva (1992), for example, were useful for understanding some of the challenges NNES writers face when composing in English; a majority of the 13 subjects in this study reported, via questionnaires, that their limited English knowledge affected the fluency and sophistication of their texts. Interestingly, Bitchener and Basturkmen (2006) found that the "limited proficiency" descriptor seemed to be a routine explanation used by post-graduate NNES students to explain why they were having problems writing in English. From this finding we may conclude that NNESs are very conscious of their status as L2 learners, and that this conscientiousness of non-native status is enduring. Other studies support this finding.

Bifuh-Ambe (2009) reported case study data gathered with one graduate-level NNES student from Korea. *Writing difficulties* was one of the four main themes that emerged from interviews with the student and her professors, despite the fact that the participant incorporated grammatical feedback from an NES. The article noted that "lack of mastery of grammar rules often caused [the participant] to earn lower grades" (Bifuh-Ambe, 2009, p. 29). It is not clear whether the participant or her professors provided the material for this conclusion, and it is possible that this deduction could be the subjective opinion of the student. Nonetheless, the identification of producing grammatically accurate writing as a source of difficulty for the student is noteworthy.

The questionnaire and interview data reported in Hennebry, Lo, and Macaro (2012) substantiated the data reported in Bifuh-Ambe (2009) because they indicated that postgraduate NNESs ($N = 43$) may be fearful that their lack of linguistic and grammatical accuracy will result in failure on an assignment. Of the students surveyed, 24 respondents reported an interest in receiving grammar ($n = 17$) and vocabulary ($n = 7$) feedback, and 20 of the students expressed interest in feedback which addressed syntactic and clarity issues in their texts. Research conducted with NNESs has, therefore, not only identified accuracy as an area of concern for NNESs as they compose a text, but has also specified their preferences for accuracy-related feedback from their instructors. It is interesting that, despite these reported student preferences, theories and approaches to language learning and writing pedagogy do not always advocate providing CF to L2 learners. Examining writing pedagogy contexts, theories, and approaches can help explain this lack of uniformity in writing instruction.

Perspectives on Writing Instruction

University-level English composition instructors operate under much different assumptions than L2 writing instructors. According to Matsuda (1999), there is an historical lack of consideration of ESL issues in composition theorists' perspectives and research. This has resulted in college composition courses being categorized as either composition courses designed for students for whom English is the L1, or as English as a second language (ESL) courses for those students who are not NESs. Evidence of such a division was reported by Matsuda (1999), who noted that ESL workshops held at the Conference on College Composition and Communication (CCCC) between 1955 and 1966 were attended almost exclusively by ESL practitioners and were subsequently omitted from the CCCC for a decade. Lack of participation

in ESL workshops resulted in CCCC members remaining "oblivious to the needs and characteristics of ESL writers" (Matsuda, 1999, p. 714). In fact, the creation of distinct ESL writing courses in the 1940s and 1950s not only alleviated "composition specialists from the extra 'burden' of teaching ESL students", but also "contributed to the division between first- and second-language specialists" (Matsuda, 1999, p. 710). Further evidence of this division can be found in contemporary composition text books. In *Writing about Writing*, for example, Wardle and Downs (2014) stated that "by the time they reach college, students are expert language users" (p. v). Despite evidence that university-level instructors feel their students need more language instruction (Huang, 2010) and that NNES students are concerned about their language use (Bifuh-Ambe, 2009; Hennebry, Lo, & Macaro, 2012), this excerpt from a contemporary university writing textbook seems to indicate a disinterest in teaching or reviewing language rules, including grammar, in mainstream university composition courses. Although it is possible that some college composition text books do cover NNES-specific issues in writing, those instructors of composition who do not use such texts may spend less time developing students' ability to write accurate sentences in favor of focusing on enhancing students' ability to effectively present their thoughts as they complete the writing processes. Second language writing instructors, on the other hand, do not have the luxury of assuming that their students are expert language users. The well-established split between composition and ESL writing, then, has important consequences for L2 writing instructors.

Because their students have difficulty with accuracy and organization when writing in English, L2 writing instructors must address these issues much more frequently and consistently than university composition course instructors. An intensive English program (IEP) writing

class, for example, provides students with instruction and feedback about both linguistic features of English, such as grammar and vocabulary, and rhetoric, or the presentation of ideas in a piece of writing. The distinction between the IEP and university composition course contexts is important because it not only highlights differences in assumptions about the students in those classes, but also differentiates the content covered in each type of class and the type of CF students might receive. The distinction between course types is also helpful for explaining L2 writing teachers' practices, and particularly the provision of corrective feedback to their students. Specifically, university composition instructors and writing tutors operate under the assumption that students already have a solid understanding of the conventions of Standard English, thereby nullifying the need to provide grammar instruction and form-focused CF because students should be able to self-edit for grammatical accuracy. Additionally, this group of instructors and tutors is likely to be influenced by the ideas of North (1984), who argued that writing centers should not be considered the "grammar and drill center, the fix-it shop, the first aid station" (North, 1984, p. 437) for students, but rather a place where they can go to find someone who will engage in a "dialogue about writing" (North, 1984, p. 440) More recent publications attest to the enduring influence of North's (1984) perspectives (Bell & Elledge, 2008; Moussu, 2013). In contrast, L2 writing instructors may not presume that their students have fully developed the ability to locate and correct errors in grammar; grammar instruction and form-focused CF is provided, then, to draw students attention to their errors, to help them increase their awareness of the types of errors they commit, and to reinforce the rules governing the target language. Given the difference in suppositions, it is possible that IEP writing instructors feel particular pressure to improve NNESs' writing proficiency as quickly as possible because they are aware that the

resources and skills taught in their courses will not be addressed either in university composition classes in which they may eventually enroll or in university writing centers.

In the past few decades, L2 writing instruction has evolved as research highlighting the differences in L1 and L2 writing has been published. Analyses of L1 and L2 writing studies have shown that L2 texts are quite distinct from L1 texts in several ways. Hinkel (2003) examined 1,083 L1 and L2 academic texts for the frequency of "*be*-copula […] vague nouns" (p. 281) and different types of verbs in his investigation of the differences in text complexity. From the analyses conducted, Hinkel (2003) concluded that NNES students use simpler syntax and lexis in their compositions, and that their writing contained more spoken-language features than that of NES students. Silva (1993) analyzed "72 reports of empirical research comparing L1 and L2 writing" (p. 657) and found that L2 texts contained fewer words and more errors than L1 texts, features that contributed to the *less effective* description of L2 writing (p. 668). The work of Doolan (2014) reinforced Silva's (1993) findings, as significant differences were reported for the number of errors made by L1 ($n = 203$) and L2 ($n = 55$) writers in the categories of *word errors* (e.g. wrong word, word form, and subject/verb agreement), *word class* (e.g. determiners and prepositional phrases), and *verb errors* (e.g. verb form and verb tense) on an expository essay. Because it is known that L2 compositions differ from NES-produced texts, it has been suggested that L2 writers need "special and systematic approaches that [consider]…the cultural, rhetorical, and linguistic differences between L1 and L2 writers" (Hinkel, 2006, p. 123). Despite the acknowledgement of the differences that exist between L1 and L2 writers, how much attention linguistics and rhetoric are given in L2 writing curricula has varied based on pedagogical trends throughout the years.

Paradigm shifts in L2 writing instruction have been analyzed and critiqued by contemporary researchers. Matsuda (2001) reported that the initial focus on grammar which was emphasized by structural views of language learning was eventually replaced by approaches to L2 writing instruction that favored the presentation of rhetorical conventions over grammar. It has also been suggested that rhetoric has been overemphasized in contemporary ESL instruction (Hinkel, 2004), and that grammar deserves more attention in L2 writing curricula "because grammar and lexis are inextricable from meaning in written discourse and because L2 writers are ultimately evaluated based on their control of language and text construction in their written discourse" (Hinkel, 2006, p. 124). These results were supported by the findings of Roberts and Cimasko (2007), who noted that professors tended to mark errors in verb tense and articles the most when considering intermediate-level ESL compositions. For the current study, the emphasis on grammatical accuracy with articles is of particular interest, and it is possible that the provision of corrective feedback can effectively emphasize its importance to students. Within the field of SLA, the consideration of error and how to treat it has evolved over time, changes that have not only shaped language classes, but also SLA research.

Language and Learning Theory in SLA

In the following sections, a general discussion of SLA theories is followed by a more focused presentation of those theories which have had an impact on L2 writing classes. Specifically, theories and approaches which discuss the role of teacher-provided CF are presented, as is research that has been conducted which may be used as evidence for and against the provision of corrective feedback to L2 writers.

Language learning courses are shaped by a number of different assumptions about language teaching and learning. Language teachers, including writing instructors, are likely to provide instruction that is shaped by many factors such as their beliefs about language learning, the theories and approaches they have studied, and their assessment of student needs. These broad considerations, in turn, impact the methods and approaches they use to meet their objectives. For example, a teacher who takes a structural approach will use methods and techniques to present language material and conduct classes which focus on "mastering the elements […] of the language," (Richards & Rodgers, 1986, p. 49) such as phonemes, morphemes, and words, and getting students to understand the target language's rules governing their use. The functional view of language differs from the structural approach in that it shifts attention away from the grammar governing a language in order to increase learners' awareness of "the topics, notions, and concepts the learner needs to communicate about" (Richards & Rodgers, 1986, p. 17). It is not surprising that a functional view of language learning helped to develop English for academic purposes (EAP) classes where linguistic information is presented in such a way as to allow university-enrolled NNES learners to communicate effectively in particular contexts (Richards & Rodgers, 1986). A third approach to language is the interactional view, which focusses on interpersonal communication. The approaches and methods used in an interactional theory-based classroom focus on developing students' awareness of the patterns of interpersonal communication used in the target language; like the functional approach, this view of language focuses less on the grammatical rules and more on the communicative possibilities of the target language (Richards & Rodgers, 1986). Determining the approach through which they wish to present language can, therefore, help language teachers to

determine the elements of language they will focus students' attention on and the types of activities they will have their students engage in to acquire the target language.

For the purposes of SLA, language theories must be paired with learning theories to best describe not only what should be taught in a language class, but also how students will learn the course content. The field SLA has been guided by several learning theories which have, in turn, influenced the methods adopted by language teachers to help their students achieve various degrees of language proficiency. Learning theories may focus on what happens as a person learns a language (e.g. process-oriented theories) or they may attempt to describe the optimum conditions needed to trigger learning (e.g. condition-oriented theories) (Richards & Rodgers, 1986). The process-oriented and condition-oriented categories are not mutually exclusive; the Natural Approach, as described in Krashen and Terrell (1983) for example, hypothesizes about both the processes involved in language learning as well as which conditions may best allow a learner to engage in these processes. Theories, then, influence the approaches emphasized and methods used in language learning classes, including L2 writing classes. Although a comprehensive description of SLA theories and approaches is beyond the scope of this paper, it is beneficial to consider those which have been identified (Bitchener & Ferris, 2012) as pertinent to defining the role of corrective feedback for L2 writing.

Theories and Approaches in Second Language Writing

The discussion thus far has focused on the development of general L2 language proficiency; while the theories and approaches described may consider writing to varying degrees, it has been noted that many SLA frameworks theorize "primarily within oral contexts how and why SLA processes occur" (Bitchener & Ferris, 2012, p. 19). This tradition can be

traced back to the work of ESL theorist Charles Fries, who stated that "speech *is* the language. The written record is but a secondary representation of the language" (quoted in Matsuda, 1999, p. 709). Because of their focus on the development of oral language proficiency, these theories are insufficient for describing and understanding the major pedagogical trends in L2 writing classes. Furthermore, "Emig (1977) emphasized how writing compared to speech is a much slower process that develops gradually" (Olan, 2012, p. 11). It is necessary, then, to narrow the scope of the current discussion even more so as to better understand the ideas that have been proposed vis-à-vis the development of L2 writing proficiency and the role of error correction. Specifically, considering error correction in L2 writing through the lenses of behaviorism, Stephen Krashen's monitor model, and cognitive theory will highlight the different opinions about the correction of L2 learners' written work (Bitchener & Ferris, 2012).

A behaviorist perspective on writing errors

Behaviorist theory was prominent during the mid-20th century. Behaviorists such as B.F. Skinner considered language learning to be like any other behavior in that it could be controlled and predicted through the manipulation of "the external conditions of which behavior is a function" (Skinner, 2004). To learn a language, therefore, individuals were trained to give correct linguistic behaviors; the repetition of correct linguistic responses to a stimulus was designed to promote good language habits that would lead to language acquisition. Errors in the target language were corrected so that the learner would not get into the habit of giving an erroneous response, whether in speech or in writing. For example, per the behaviorist perspective, if an L2 writer made a mistake, the error should be acknowledged and the writer should be given a correct model to emulate to avoid making the error in the future. This rather

factory-like model of language acquisition was challenged by researchers in the 1960s and 1970s, who were interested in understanding the process of language acquisition for individuals (Bitchener & Ferris, 2012). Increased attention to learners' processing of a target language was accompanied by a shift in the consideration of learners' errors; rather than being considered something for learners and teachers to avoid and prevent, error was viewed "more positively as an indicator of the mental processes that take place during the learning and acquisition of the target language" (Bitchener & Ferris, 2012, p. 6). Interestingly, increased attention to learner errors and the role of corrective feedback for language learning did not mean that all SLA theories considered corrective feedback to be beneficial, as evidenced by the notions proposed in Krashen and Terrell (1983).

The monitor model

In *The Natural Approach*, Krashen and Terrell (1983) presented readers with a comprehensive overview of their SLA theories, approaches, and methods, collectively referred to as the monitor model. One important distinction made by the authors was between language acquisition and language learning; acquisition of language "is 'picking it up,' i.e., developing ability in a language by using it in natural, communicative situations", whereas language learning is 'knowing the rules,' having a conscious knowledge about grammar" (Krashen & Terrell, 1983, p. 18). Ideally, the authors state, language learners would be able to participate in natural conversations without concerning themselves with the rules of the target language. When used, the Natural Approach presumably encourages participation in conversations through building an understanding of "what is being said, rather than how it is said" (Krashen & Terrell, 1983, p. 19), through the maintenance of learners' openness to the language input, and through

the emergence of target language production by the learner, which the authors characterize as "quite flawed" (Krashen & Terrell, 1983, p. 20). Krashen and Terrell, then, explained not only what it means for learners to acquire a language, but also how learners can demonstrate what they have acquired. The authors maintained, however, that the primary focus of their theory was on the provision of comprehensible input to encourage comprehension, rather than on students' immediate production.

The lack of emphasis on student production, and especially of written production, in the Natural Approach has important implications for the provision of corrective feedback. Krashen and Terrell (1983) explicitly state their opposition to error correction for student speech, saying "overt error correction […] is likely to have a negative effect on the students' willingness to try to express themselves" (p. 177). According to the affective filter hypothesis of the monitor model, teachers should avoid correcting errors because this practice would increase students' anxiety, thereby preventing them from attending to the comprehensible input yet to be covered. Rather than pointing out errors students make, the teacher should reformulate and expand upon what the student attempted to communicate, thereby increasing students' exposure to comprehensible input (Krashen & Terrell, 1983). It is important to recognize that these notions are applied conceptually to student speech, rather than to their written work; writing is not emphasized by the Natural Approach because it does not "encourage comprehensible input" (Krashen & Terrell, 1983, p. 149). Although Krashen and Terrell (1983) discuss writing on a very limited basis, their notions about the needlessness of corrective feedback for L2 writing were championed by SLA researchers in the following decades (Truscott, 1996, 2004, 2007;

Truscott & Hsu, 2008). This extension of the principles of the Natural Approach to L2 writing

instigated a flurry of research that is covered in-depth in coming sections.

Cognitive theory and SLA

In contrast to the emphasis on providing comprehensible input to students while

preserving their emotional openness to the target language as described in Krashen and Terrell

(1983), cognitive theorists working in SLA focus on presenting learners with information that

they can consciously process and integrate into their linguistic repertoire. Cognitive theories of

SLA are inspired by concepts of cognitive psychology, which emphasizes the role of learner

attention, perception, memory, and problem solving capabilities (Ellis, 2008). Although there

have been several models of SLA developed from cognitive theories, the focus in this section

will be on those theories which have been identified as particularly relevant to L2 writing

pedagogy (Bitchener & Ferris, 2012).

The first model presented, McLaughlin's attention-processing model (Brown, 2000),

considers language learning to be a "*skill*, because various aspects of the task must be practiced

and integrated into fluent performance" (McLaughlin, 1987, p. 133, emphasis in the original).

According to this model, language learners become increasingly proficient in a language as their

language production becomes more automatic in nature. A language class should, then, provide

the learner with explicit instruction, opportunities for practice, and corrective feedback to enable

the learner to process and eventually automatize the correct linguistic information. When

applied to linguistic and rhetorical instruction in an L2 writing context, this model would first

provide students with explicit lessons in grammar and content organization. Next, students

would complete practice activities to help them and their instructor gauge how much of the

lessons had been remembered. According to this model, the instructor would provide students with corrective feedback to help them identify, analyze, and correct their errors in production, a process that could eventually lead to automatically accurate writing.

A second model, Anderson's adaptive control of thought (ACT), distinguished between declarative knowledge, or knowledge of the linguistic rules with limited successful application thereof, and procedural knowledge, or linguistic knowledge that has been practiced and automatized (Bitchener & Ferris, 2012). A student may, for example, have declarative knowledge of how to properly use definite and indefinite English articles and may demonstrate that knowledge by stating the rules governing their uses and by completing activities that target those structures. Procedural knowledge of the articles, however, would be evidenced by the student's accurate use of them in extemporaneous situations, such as an in-class writing. As many a frustrated language learner will attest, successful completion of activities that draw on declarative knowledge does not guarantee perfection on those activities which demand demonstration of procedural knowledge of several linguistic and rhetorical structures at once. According to Anderson's ACT, time and repetition are necessary to make declarative knowledge become procedural knowledge. Corrective feedback is also important because it enables learners to identify, analyze and amend errors in declarative knowledge tasks, a process that may lead to automatization of correct language features for L2 writers.

Another cognitive theorist, Manfred Pienemann, proposed that learners' language production could be predicted by their proficiency level. Pienemann's processability theory proposed that linguistic structures "will be produced by the language learner only if the necessary processing procedures are available to the learner" (Pienemann, 1998, p. 1).

According to Pienemann, language learners are necessarily limited in their production of the target language by their knowledge about the target language's structures and functions; because "the procedure of each lower level is a prerequisite for the functioning of the higher level" (Pienemann, 1998, p. 7), L2 learners cannot be expected to consistently produce language at a high proficiency level unless they have a solid linguistic foundation in the target language. Processability theory, therefore, has an interactionist perspective on language learning because it postulates that "learners need to pay some attention to language form and structure if acquisition is to occur" (Bitchener & Ferris, 2012, p. 17). According to this model, then, it is possible that the provision of corrective feedback is one aspect of language instruction that can facilitate the acquisition of a target language by drawing learners' attention to their accuracy errors.

SLA Research into Error Correction and Accuracy

The previous sections highlighted a number of SLA theories which may influence L2 writing classes, including those offered by IEPs. IEP writing instructors are necessarily influenced by the theories and approaches proposed by SLA and L1 writing pedagogy theorists, who attempt to explain how learners acquire and demonstrate their language proficiency in written texts and what role the teacher should have in this process. Traditionally, corrective feedback is given when students made mistakes to prevent students from making the errors in future production, a practice that has been "essentially based on intuition about what seemed to be effective practice" (Bitchener and Ferris, 2012, p. 8). Rather than discussing corrective feedback in theoretical terms, it is better to examine the published research, which may be used to bolster the validity of theoretical notions. Of particular relevance to this paper are the respective claims made by input-only and cognitivist theories about the role of corrective

feedback in L2 writing classes. Delving into existing research can help L2 writing teachers

evaluate prevailing theoretical claims and determine if and how they will use corrective feedback

in their classrooms. Additionally, this type of investigation can enable future researchers to

determine what aspects of corrective feedback and L2 writing still need to be explored.

The influence of the *Natural Approach* and the error correction debate

As previously noted, the Natural Approach advocated by Krashen and Terrell (1983)

emphasized the primary role of comprehensible input for L2 acquisition. According to the input

hypothesis, grammar instruction and, therefore, error correction are not necessary because the

students would be provided with correct target language which they should be able to understand

and, eventually, produce. Although Krashen and Terrell (1983) downplayed the importance of

producing written text for improving students' language proficiency, their ideas about providing

students with target language input without explicit error correction have been investigated by

researchers working on L2 writing. Closer examination of the research may allow us to better

understand this approach to L2 writing instruction and the improvements in students' writing that

can be expected when it is implemented.

There is evidence that target language input has a positive effect on some aspects of L2

students' texts. Perez-Vidal and Juan-Garau (2011), for example, reported that advanced NNES

students whose L1s were either Spanish or Catalan ($n = 35$) improved their writing fluency and

lexical complexity in English as a result of their participation in a three-month study abroad

program. Although students took language and culture classes conducted in English during the

study abroad term, they did not receive formal writing instruction. Despite making statistically

significant improvements for two writing features, participants did not show as much

improvement in their written grammatical accuracy, as measured by the number of errors per word. Sasaki (2004, 2007, 2011) conducted similar research using intermediate-level study abroad students, although the participants in his two studies received writing instruction during their time abroad. Sasaki (2004) compared the writing development of Japanese L1 students who either stayed in Japan to study English ($n = 5$) to those students who spent 2 to 8 months in the United States or Canada ($n = 6$). Sasaki (2004) found that the students who went abroad improved their writing ability, fluency, and strategy use; similar results were obtained in the 2007 study. Interestingly, Sasaki (2007) also reported that the quality of the study abroad participants' ($n = 7$) writing improved, but this result should be interpreted with caution because quality was measured using a holistic scale, which makes it difficult to determine precisely how students' grammatical accuracy in writing contributed to the *quality* assessment for the study. Finally, Sasaki (2011) reported results of a longitudinal study with 37 Japanese adult EFL students that investigated the effects of participating in a study abroad program from 1.5 to 11 months on participants' L2 writing ability and motivation. Sasaki (2011) reported that those participants who spent 4 months or longer in the study abroad program made significant improvements in their writing ability, as measured by holistic scores on compositions rated by two EFL writing experts. There is evidence, then, that exposure to language, with or without writing instruction, can help L2 learners improve some aspects of their writing.

One of the most vocal researchers in favor of input-only language instruction is John Truscott, who has published several works in favor of abolishing the use of corrective feedback in L2 writing courses. Truscott (1996) proposed that grammar correction in L2 writing classes should be abandoned because it is "ineffective" and "harmful" (Truscott, 1996, p. 327). The use

of words such as *ineffective* and *harmful* indicate that Truscott was influenced by the input and affective filter hypotheses proposed by Krashen and Terrell (1983). Despite Truscott's discussion of publications which appeared to support his claims (Krashen, 1992; Leki, 1990; VanPatten, 1986a, 1986b), his conclusions were not based upon any empirical evidence of his own. Furthermore, the publications cited in Truscott (1996) are not primary sources and were not critiqued. The lack of empirical evidence and critique affect readers' ability to consider the argument as objective and well-delineated. These criticisms can also be applied to Truscott (2007), a paper that provided a more comprehensive review of research on the effectiveness of corrective feedback on writing accuracy and that had as an explicit goal the presentation of qualitative and quantitative measures to dismiss the idea that corrective feedback could improve writers' accuracy. Based on the studies reviewed, Truscott concluded that correction had a "small harmful effect on students' ability to write accurately" and that he is 95 % confident that if corrective feedback "actually has any benefits, they are very small" (Truscott, 2007, p. 270). Although the latter statement may have been provided to minimize the perceived effectiveness of corrective feedback, it nonetheless seemed to dismiss the impact of Truscott's claims and admit to the potential of corrective feedback to improve student writing.

The possibility that corrective feedback could be used by students to improve their texts was also reported in Truscott and Hsu (2008). For this study, the authors analyzed the error rates in narratives produced by 47 graduate-level English as a foreign language (EFL) students in science, technology, engineering and math (STEM) fields. Truscott and Hsu found that the students in the experimental group and the control group were comparable in their writing abilities as measured by the error rates on the rough draft of the first narrative. Perhaps the most

surprising result reported by the researchers is that "error feedback had a significant effect on student' rewrites" (Truscott & Hsu, 2008, p. 298), a finding that contradicted Truscott's prior claims about needlessness of corrective feedback. Furthermore, this data affected the tone of the discussion in the article; Truscott and Hsu did not unequivocally dismiss the idea that corrective feedback could enable students to write better on subsequent drafts. The similar error rates on the second narrative, however, did lead the researchers to claim that students may not have learned anything from the process of revising their first text. While this conclusion may be supported by the empirical data from the study, it is important to recognize that the group of students studied might not have shown any evidence of learning because of the type of writing they were asked to produce, as the relevance of narratives to the written work performed in university STEM courses is unclear.

Despite the results of Truscott and Hsu (2008), Truscott has continued publishing articles which question the efficacy of corrective feedback for student learning. In a response to Anthony Bruton's evaluation of the corrective feedback debate (Bruton, 2009), Truscott (2010) stated that language learning consists of the "development of an extremely complex and largely unconscious system in the minds of learners, and gradual improvement of their ability to use the system effectively," a process, he stated, that is "poorly understood" (Truscott, 2010, p. 629). In the same article, Truscott summarized his position quite concisely, saying:

> Some people do become highly skilled second language writers; if correction is not
> helpful and writing practice is not helpful (a point on which I remain agnostic, by the
> way), how can we explain this success? I would say the obvious answer is input,
> particularly reading. (Truscott, 2010, p. 631)

Truscott (2010), because of his endorsement of input-only instruction, reinforced a theoretical

alignment with Krashen and Terrell (1983). Although Truscott has steadfastly maintained this

theoretical position, it is necessary to further examine the research on the effectiveness of input-

only instruction to determine how it improves writing proficiency generally and written

grammatical accuracy specifically.

Although some researchers insist that target language input is enough for students to

acquire and develop writing proficiency in a target language, Zhang and Mi (2010) and Storch

(2009) provided data to contradict these claims. Zhang and Mi (2010), analyzed English

language skill development of Chinese native speakers ($N = 40$) studying at eight universities in

Australia. Despite being limited in generalizability, Zhang and Mi (2010) highlighted some

trends which may in fact describe learning patterns for non-Chinese NNESs studying abroad in

other Anglophone countries. According to the qualitative data gathered during the study,

students' listening and speaking skills were dramatically improved after two years of study

abroad, but "the length of study did not seem to have such a big impact on the informants'

academic writing" (Zhang & Mi, 2010, p. 376) as measured by participants' self-reports on a

questionnaire. Given that the large majority of the participants for this study claimed to have

writing difficulty regardless of academic discipline, the fact that there was little improvement in

writing skills should be noteworthy.

Storch (2009) conducted a quantitative study into the effectiveness of input for improving

L2 learners' texts. For this study, Storch used a diagnostic test developed by the Australian

university where the research was conducted to evaluate the structure, content, fluency, accuracy,

grammatical complexity, lexical complexity, and use of sources in participants' ($N = 25$)

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argumentative essays; each aspect was rated for fluency, content, and form to determine a holistic assessment of the participants' texts. It is important to note that the participants for this study had been identified by the university testing center as NNES students who needed help with the English language but who sought little or no help for this during the semester when the study was conducted. The participants' essays from the beginning and the end of the semester were analyzed using the same scale, and were compared to determine how much progress in writing students made through exposure to English in the English-medium Australian university where they were studying. The results of the data for Storch (2009) were interesting because they indicated improvement in some, not all, of the aspects analyzed. Although students improved their level of formality, content, and structure (e.g. qualitative measures), their fluency, accuracy, grammatical and lexical complexity (e.g. quantitative measures) scores did not show improvement. The lack of progress for the quantitative aspects of writing investigated by Storch (2009) suggests that students need additional support to improve these aspects of their L2 writing.

The studies conducted on the effect of input on students' language proficiency have shown that although target language input can help students improve their writing fluency and lexical complexity, there is no evidence that target language input alone is sufficient for improving L2 writers' grammatical accuracy. Rather than focusing on the input L2 learners receive and use to produce texts, other researchers have proposed that producing written work and noticing errors in texts are more beneficial for developing students' written grammatical accuracy and, therefore, writing proficiency. Swain (1985), for example, proposed the output hypothesis. According to this notion, the act of producing the target language can help to make

language learners aware of what they want and need to learn to increase their productive language proficiency. It is important to note that the output hypothesis does not deny students' need for language input; rather, language production, it is argued, can facilitate "second language learning in ways that are different from, or enhance, those of input" (Swain & Lapkin, 1995, p. 371). More specifically, the act of producing the target language can help learners "notice that they do not know how to say (or write) precisely the meaning they wish to convey" (Swain, 2005, p. 474). Producing the target language and gaining an awareness of what they do not know how to express may prompt learners to ask for explicit instruction or to seek materials (input) that can help them reach their L2 objectives. Language output, then, is considered complimentary to, rather than a substitute for language input.

The interdependence of input and output was highlighted by Burger (1989), who attempted to determine whether input or input and text production was more beneficial for developing advanced adult ESL students' oral and written proficiency, as measured by their performance on tests of listening comprehension, dictation, translation, writing, and a cloze activity. Participants in the comparison group ($n = 17$) were NNES students who were taking an elective ESL course, and the treatment group as comprised of NNES students ($n = 16$) who were in a "special sheltered section" of a psychology class who took "subject matter tests in lieu of the term paper and mid-semester essay examination required by the regular sections" (Burger, 1989, p. 48). A sub-group of the treatment group contained students from the sheltered class who registered for an "extra Reading-to-Writing credit course" ($n = 10$) (Burger, 1989, p. 49). All participants completed the battery of proficiency tests in September (pretest measure) and in March (posttest measure) during one academic year. The researcher found that all participants

improved their general language proficiency, but she did not find a significant difference between the composition scores of students from the treatment group who did not take the Reading-to-Write class and those who did. In other words, producing more written English did not help the Reading-to-Write students make significantly more progress in their L2 writing than their peers from the sheltered class. Burger (1989) hypothesized that proficiency gains are more difficult to detect at higher proficiency levels and that the groups could have been too small to detect differences between them. She also suggested that additional reading practice, rather than additional writing practice, may have helped the experimental group students improve their proficiency. Because Burger (1989) failed to determine whether input alone or input paired with output was more effective for improving NNESs' writing proficiency, we must continue to consider hypotheses, such as the noticing hypothesis (Schmidt, 1990, 1995, 2001), that attempt to more completely describe the role of input, output, and corrective feedback for L2 acquisition.

Swain and Lapkin (1995) alluded to the importance of noticing in SLA when they stated that output could be "one of the triggers for [students] noticing" (p. 373) gaps or errors in their developing L2 skills. The noticing hypothesis was inspired by the notions of cognitive psychology and the fundamental difference hypothesis (FDH) described in Bley-Vroman (2009), and builds on the output hypothesis by advocating that writing instructors direct students' attention to specific language features. Specifically, Schmidt argues that failing to draw L2 students' attention to language features, or "unattended learning […] appears limited in scope and relevance for SLA" because "there is little if any learning without attention" (Schmidt, 2001, p. 3, 16). According to the principles of cognitive psychology, attending to language features is necessary because it allows learners to store the content in their long-term memory and,

therefore, to more fully process the content emphasized. Rather than merely providing L2 learners with sources of input, a better instructional practice, Schmidt argued, would be to "focus attention on forms and meanings in the input, [which is] a prerequisite for subsequent processing" (Schmidt, 2001, p. 10). According to Schmidt (2001), this is all the more important for adult L2 learners because, according to the FDH, "in SLA (unlike L1 acquisition), learners […] accumulate constructions or patterns, and noticing is the interface between the input and the developing set of such constructions" (Schmidt, 2001, p. 16). Published research has validated these claims.

Although the research reported by Swain (1993, 1995, 1998) and Swain and Lapkin (2002) supports both the output and noticing hypotheses, the research was conducted with language learners who were not adults and, particularly if the FDH is valid, the results would not necessarily generalize to adult L2 learners. Fortunately, other researchers have conducted research on noticing and output with adult L2 writers. Kepner (1991), for example, compared the efficacy of two types of WCF for improving adult Spanish learners' ($N = 60$) written grammatical accuracy. It is interesting to note that the WCF was provided in participants' journals; there was no indication that participants were required to modify their writing after receiving WCF. Indeed, this may explain why Kepner (1991) did not find that either type of WCF significantly improved participants' grammatical accuracy, which was operationalized as sentence-level errors in grammar, vocabulary, and syntax (p. 308). Kepner (1991) used these results to argue that WCF is ineffective, a position Truscott would champion a mere 5 years later. However, the lack of required processing of the WCF received by participants in Kepner's study

may have influenced the results, as the work of Adams (2003) and Song and Suh (2008) suggested.

Adams (2003) replicated Swain and Lapkin (2002) using 56 adult intermediate-level Spanish L2 learners studying in a North American university. The objective was to determine the "effects of noticing and measures of noticing on second language learning through writing tasks" (Adams, 2003, p. 347). Adams was particularly interested in the noticing students engaged in when they receive corrective feedback and their ability to analyze the differences between the corrective feedback and their own original writing. For this research, participants first narrated and wrote a picture-based story in pairs. Next, a native Spanish speaker rewrote the stories by making changes to vocabulary and grammar to make the narratives more native-like. Once the rewrites were completed, they were given to the student dyads, along with their original submissions. Adams found that students ($n = 18$) who completed the noticing activity of verbalizing the differences they noted and why they thought the changes had been made as well as a simulated recall session during which they described the thoughts they had while reviewing the corrective feedback were able to incorporate the changes they had discussed better than the students who just completed the noticing activity ($n = 18$) and the control group participants ($n = 20$), who did not receive a reformulated story, when they were asked to write the story individually. For this study, better performance was measured by error counts of lexicon or grammar (verb morphology, preposition use, gender/agreement, other) made on individual story rewrites. Thus, Adams (2003) supported claims about the benefits of noticing and output. Similarly, Song and Suh (2008) reported that the Korean EFL participants who completed an output activity after completing a noticing task ($n = 41$) produced more "target-like conditional

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clauses" (p. 304) than participants who did not ($n = 11$). Despite the large difference in the number of participants in each group, the results of Song and Suh (2008) suggest that having students notice errors, perhaps through the provision of corrective feedback, and having them modify their output once their errors have been identified could help learners produce more native-like language in subsequent writing tasks. Other studies conducted on the effects of noticing on L2 writing have important implications for L2 writing instructors who may wish to use noticing to help their students improve their written grammatical accuracy.

The work of Qi and Lapkin (2001) reported differences in students' ability to engage in noticing based on their proficiency level. The two adult ESL learners in this study were trained to used think-aloud protocols and were recorded as they composed a picture-based narrative and as they compared their original work with a reformulated version that contained grammatical, morphological and organizational changes. Finally, the participants were assessed on their ability to make corrections to their original work based on what they had noticed in the reformulation of their text. The researchers found that the higher-proficiency learner engaged in better quality of noticing, as measured by his ability to provide explanations for the changes he remarked in the reformulated version of his work; the lower-proficiency participant made fewer attempts to explain the changes noted and made fewer corrections to her original text. It is possible that this result may support Pienemann's processability theory because it suggested that students may be limited in their ability to understand the corrective feedback they are given if it deals with structures beyond their current proficiency levels; on the other hand, it is possible that the lower-proficiency participant was reluctant to offer explanations for the changes noted because she lacked confidence in her ability to correctly verbalize why a change had been made.

Interestingly, Hanaoka (2007) also investigated the effect of noticing on students' ability to incorporate textual revisions. Rather than using think-aloud protocols, however, Hanaoka (2007) engaged intermediate and advanced EFL students ($n = 37$) in note-taking as evidence of their noticing differences between an original and a reformulated version of their written work. Hanaoka noted that students noticed and incorporated lexical changes the most, although he admitted that this may have been the result of the difficulty of the noticing task; although there was evidence of students noticing grammatical changes, these observations may have been more difficult to indicate in students' notes.

The studies conducted on the effect of input have shown input-only instruction is insufficient for improving written grammatical accuracy. Furthermore, improvement using output and noticing appears to be dependent on adult learners' L2 proficiency or the noticing tasks they complete. Given these trends, we may consider another possibility for improving students' accuracy when writing: corrective feedback. Research conducted by Santos, Lopez-Serrano and Manchon (2010) with secondary school EFL learners showed that direct CF was more effective than a reformulated version of student texts for prompting student acknowledgement and incorporation of grammatical corrections. It is possible, then, that a similar trend would be observed with adult L2 learners, particularly since students have reported their corrective feedback preferences in published research. For example, ESL student participants ($n = 33$) in a study conducted by Amrhein and Nassaji (2008) indicated on the study questionnaires that they wanted repeated errors to be marked each time, but also that they wanted the instructor to mark all errors encountered in their papers. Furthermore, the participants indicated a preference for explicit correction of errors, and were most concerned with receiving

grammatical, orthographical, and lexical feedback. Interestingly, analyses of questionnaire data

by Karathanos and Mena (2014) also indicated that adult, university-enrolled, NNES students (*n*

= 74) preferred to have all of their errors in a paper circled, but that only 14 of these students

wanted their errors corrected for them (e.g. direct CF), compared to 72 students who indicated

that they would prefer to have the instructor circle their errors and provide information about the

type of error committed. Because the number of NNES responses is greater than the number of

participants, it is possible that individuals gave more than one response on the questions

pertaining to *preferred feedback approaches for grammatical errors* (Karathanos & Mena, 2014,

p. 6). Nonetheless, the data from Amrhein and Nassaji (2008) and Karathanos and Mena (2014)

highlighted ESL student preferences when receiving feedback on their work Despite such

evidence, however, there is a debate within the field of SLA about the appropriate use and types

of feedback L2 learners should be given to accomplish these objectives.

In contrast to the research that suggests comprehensive input is sufficient for L2 learners

to develop writing proficiency and down-plays the need for students to receive corrective

feedback, there are several publications that present evidence in favor of the provision of CF for

L2 learners. In a recent presentation at the University of Central Florida, Dana Ferris presented

perspective to her audience and discussed recent research findings which support her advocacy

for CF, particularly with L2 learners. Ferris believes that L2 teachers should provide corrective

feedback which is systematic, focused, patterned, and which requires student involvement to

make the necessary improvements to their written work (Ferris, 2010, p. 2). Other studies have

shown that L2 writers not only value corrective feedback (Ferris, 2006; Ferris & Roberts, 2001;

Montgomery & Baker, 2007), but also use CF to revise and edit their written work (Ashwell,

2000; Chandler, 2003; Ferris, 2006; Ferris & Roberts, 2001; Truscott & Hsu, 2008). Additional

research findings indicate that students apply what they learn via CF on one assignment when

composing new texts (Bitchener & Knoch, 2010a, 2010b; Ellis, Sheen, Murakami, & Takashima,

2008; Ferris, 2006; Sheen, 2007). There is evidence, then that corrective feedback can and does

positively influence L2 learners.

Before considering the published literature about the effectiveness of corrective feedback

for improving adult L2 learners' written grammatical accuracy, it is necessary to define the

different types of corrective feedback that students may be given on their grammatical errors.

For this literature review, the designations made by Ellis (2009) will be employed; the table

below presents possible corrective feedback options concisely for the reader:

Table 1

Types of Corrective Feedback with Description

Type of CF	Description	Example
1. Direct CF	The teacher provides the student with the correct form.	The dogs ~~is~~ are drinking.
2. Indirect CF	The teacher indicates that an error exists but does not provide the correction.	
a. Indicating and locating the error	This takes the form of underlining and use of cursors to show emissions in the student's text.	The dogs <u>is</u> drinking.
b. Indication only	This takes the form of an indication in the margin that an error or errors have taken place in a line of text.	→The dogs is drinking.
3. Metalinguistic CF	The teacher provides some kind of metalinguistic clue as to the nature of the error.	
a. Use of error code	Teacher writes codes in the margin (e.g. ww = wrong word; art = article)	The dogs is drinking. (conj.)
b. Brief grammatical descriptions	Teacher numbers errors in text and writes a grammatical description for each numbered error at the bottom of the text.	The dogs is[1] drinking. [1] subject-verb agreement
4. The focus of the feedback	This concerns whether the teacher attempts to correct all (or most) of the students' errors or selects one or two specific types of errors to correct. This distinction can be applied to each of the above options.	
a. Unfocused CF	Unfocused CF is extensive.	
b. Focused CF	Focused CF is intensive.	

(Ellis, 2009, p. 98)

It is important to analyze the research that has investigated the effectiveness of different types of feedback and their combinations to better understand the types of learners and errors they can best affect to improve L2 learner writing. Having discussed the research evidence related to input-only, input and output, and noticing using reformulated versions of student texts, the discussion will now concentrate on research that implemented the strategies listed in Table 1 for correcting written grammatical errors.

Direct, focused feedback

Both Bitchener (2008) and Bitchener and Knoch (2008) reported the results of direct WCF, direct metalinguistic explanations, and no WCF for improving adult migrant and international students' use of English articles during two-month studies; Bitchener's 2008 study was conducted with 75 ESL students, while the study conducted by Bitchener and Knoch (2008) had 144 ESL participants. In both studies, the researchers found that direct WCF and metalinguistic feedback were effective in helping the participants, who were at a low intermediate level of English proficiency, use English articles more accurately when writing new narratives. For Bitchener (2008) and Bitchener and Knoch (2008) accuracy was operationalized as "a percentage of correct usage for each [text] given the range of obligatory occasions" (Bitchener & Knoch, 2008, p. 422). Furthermore, delayed posttests, which required participants to produce a third composition either two months (Bitchener, 2008) or seven weeks (Bitchener & Knoch, 2008) after completing the first posttest, showed that the accuracy gains were retained after the treatments were given. These results attest to not only the immediate positive changes that can be effectuated by providing students with corrective feedback, but also to the durability of accuracy gains.

The results from the studies conducted by Bitchener (2008) and Bitchener and Knoch

(2008) are supported by the findings reported in research reported by Bitchener and Knoch

(2009a; 2009b). Bitchener and Knoch's 2009a study was conducted with 39 low intermediate

ESL students in New Zealand during six months. The researchers investigated the effects of

three types of direct CF: (a) direct CF with written and oral metalinguistic explanations; (b)

direct CF with written metalinguistic information; and (c) direct CF, on participants' accurate use

of English articles in new narrative texts. The accuracy measure was the same as that used in

Bitchener (2008) and Bitchener and Knoch (2008). The researchers found that all three CF

groups improved their accurate use of English articles on the first posttest, which was completed

after the students in each group had considered corrective feedback given on their pretest

composition for five minutes. Additionally, the participants demonstrated increased accuracy, as

compared to the pretest performance, on delayed posttests completed one week and six months

later. Interestingly, the researchers reported that there were no statistically significant

differences between the CF groups on any of the three posttests. Similar results were reported in

Bitchener and Knoch (2009b) and Bitchener and Knoch (2010a), which were both carried out

over ten months with 52 adult low intermediate ESL students. Although the design and analysis

used in Bitchener and Knoch (2009b) and (2010a) were the same as in Bitchener (2008) and

Bitchener and Knoch (2008), they differed from the previously completed research because they

were more longitudinal studies and they included a control group of students who did not receive

corrective feedback before completing the first posttest. Collectively, the work of Bitchener

(2008) and Bitchener and Knoch (2009a, 2009b, 2010a) indicate that providing low-intermediate

ESL students with direct WCF, with or without metalinguistic explanations, is effective for improving their accuracy with English articles, and that this increased accuracy is enduring.

Bitchener and Knoch (2010b) compared the efficacy of direct and indirect WCF for improving the accuracy of article usage in new narratives with 63 advanced ESL students studying at an American university. The participants were divided into four treatment groups; group one received written metalinguistic feedback, group two received indirect feedback in the form of circles around their errors, and of the feedback, group three received both written metalinguistic feedback and an "oral form-focused review" (Bitchener & Knoch, 2010b, p. 212) of the feedback given, and group four did not receive feedback. For this study, feedback was only given on the participants' pretest narrative texts. While each of the groups that received corrective feedback (groups 1, 2, and 3) outperformed the control group (group 4) on the immediate posttest, the researchers found that only the students who received direct WCF (groups 1 and 3) were able to maintain their accuracy gains, as measured by their performance on a delayed posttest for which the participants had to write new narratives. The results from Bitchener and Knoch (2010b) are particularly interesting for L2 writing instructors because durability of accuracy gains was strongly associated with direct CF. Additionally, Bitchener and Knoch (2010b) indicated that direct CF was not only effective for increasing low-intermediate students' ability to use English articles in new texts, as was shown in Bitchener (2008) and Bitchener and Knoch (2008, 2009a, 2009b, 2010a), but that it is also effective for improving the accuracy of advanced ESL student writers. Despite the numerous studies published by Bitchener and Knoch, they are not the only researchers who have investigated the usefulness of direct CF for improving NNES writers' grammatical accuracy.

Sheen (2007) also compared the effects of direct correction, direct metalinguistic feedback, and no CF for improving adult intermediate-level students' ($N = 91$) accurate use of English articles in new texts. Sheen (2007) used three types of immediate and delayed posttests to assess participants' accuracy acquisition: "(a) a speeded dictation test, (b) a narrative writing test, and (c) an error correction test" (Sheen, 2007, p. 264). As was reported in Bitchener and Knoch (2010a, 2010b), both treatment groups outperformed the control group on the immediate posttests, and the direct metalinguistic group maintained and increased level of accuracy on the delayed posttests, which took place between three and four weeks after the first posttests. Sheen (2007) proposed that the increased accuracy levels attained by the participants in the treatment groups could be explained by the limited focus of the corrective feedback provided to them; Sheen (2007) further suggested that unfocused feedback, or feedback that did not target one specific error type, could overload students' attention spans, thereby reducing their ability to make corrections. This notion was further explored in Ellis, Sheen, Murakami, and Takashima (2008). Like Sheen (2007), Ellis et al. (2008) compared the effects of direct focused and unfocused feedback on intermediate level L2 learners' ($N = 49$) accurate use of English articles in both new narratives and error correction tests. Ellis et al. (2008) found that both treatment groups *-direct unfocused CF* and *direct focused CF* - were able to use English articles with greater accuracy on the posttests than the control group, although these gains were more consistently maintained by the focused CF group on the delayed posttest. The results of Sheen (2007) and Ellis et al. (2008) are further supported by the work of Sheen, Wright, and Moldawa (2009).

Sheen et al. (2009) also investigated the effect of focused and unfocused feedback on improving intermediate level L2 learners' ($N = 80$) accuracy in revised and new narrative compositions. The data for the study, which were analyses of accuracy scores for articles as well as four other grammatical features including the "copula 'be'" (Sheen, Wright, & Moldawa, 2009, p. 560), prepositions, and both the regular and irregular past tense, were gathered during a nine-week period. Sheen et al. (2009) showed that focused WCF that addressed article usage errors only, was more effective than unfocused WCF that addressed articles and the other four grammatical features collectively. Specifically, the students who received focused WCF ($n = 22$) not only made more significant gains in articles, but also on the wider range of grammatical features than the students who received unfocused WCF ($n = 23$) or who participated in writing practice ($n = 16$). Therefore, Ellis et al. (2008) and Sheen et al. (2009) seemed to confirm the attentional hypothesis proposed in Sheen (2007) and these results seem to indicate that direct CF on a limited number of structures is most effective for improving ESL students' accuracy for several features when writing.

Direct, unfocused feedback

Research into the effectiveness of direct CF has examined other features than English articles; Bitchener, Young, and Cameron (2005) reported on the effectiveness of different types of direct feedback for increasing the accurate use of several grammatical features including prepositions, the past simple tense, and definite articles when writing a letter to a friend. The 53 post-intermediate level ESL learners who participated in the study were grouped by their status as either full-time or part-time students; the part-time students were further categorized by the number of hours they attended class, either for ten or for four hours per week. Each of the three

groups received feedback on three occasions, after they had completed the first three writing tasks for their ESL course. The full-time students ($n = 19$) received direct WCF in the form of corrections over their indicated errors, and these students also participated in a five-minute conference with their instructor to review their writing. The ten-hour part-time students ($n = 17$) also received direct corrections, but they did not conference with their instructor. The third group, the four-hour part-time students ($n = 17$) did not receive any linguistic feedback on their papers, but rather were given feedback about their content and organization. The researchers found that the two groups who received direct WCF improved their accuracy with the past simple and definite articles, but not prepositions, on new texts. Based on this result, the researchers concluded that the past simple and definite articles were more easily treated than prepositions. Additionally, the lack of a "linear, upward pattern of improvement" (Bitchener, Young, & Cameron, 2005, p. 201) for learners attested to both the difficulty of writing and the variability of the effectiveness of WCF.

The results reported by Bitchener et al. (2005) suggested that it may be easier for students to increase their accuracy with certain linguistic features than others when given direct WCF. Other researchers have investigated this phenomenon, which seems to support the notions of Pienemann (1998), as well. Ferris (2011), for example, dichotomized learners' errors by labeling them as either treatable or untreatable; treatable errors are those errors that are rule-governed, whereas untreatable errors are idiosyncratic in nature (p. 36). A learner who writes "John like chocolate" would have committed a treatable error because the instructor could remind the student of the rules governing verb conjugation in English and, more specifically of the need to add an "s" when conjugating an English verb into the third-person. A learner who writes "I gave

him a dollar from the goodness of my heart", however, has produced an error that is less

treatable because it involves the use of idiomatic English; although "from" is properly positioned

in the sentence, it may be difficult for an NNES writer to understand why the instructor either

crossed out "from" and replaced it with "out of", if the instructor is providing direct CF. The

consideration of writing errors as more or less treatable has also been discussed by Sanz and

Morgan-Short (2005), and has been empirically tested by Gass, Svetics and Lemelin (2003).

Sanz and Morgan-Short (2005) postulated that the effectiveness of CF is dependent on "aspects

of the language and rule complexity" (Sanz & Morgan-Short, 2005, p. 240) for the errors

addressed, an idea supported by the research of Gass et al. (2003), who found that adult students

learning Italian ($n = 34$) needed more explicit CF for aspects of the language that "are highly

complex and abstract" (p. 527). There is evidence, then, that L2 students' ability to correct their

compositions using the corrective feedback provided by their teacher may vary depending on

whether the errors are rule-governed or more abstract in nature. Interestingly, it seems as though

the treatability of errors has a greater impact on CF effectiveness than does feedback type.

Indirect, unfocused feedback

Results from two studies support the idea that the ability of students to use corrective

feedback to improve their accurate use of English depends more on the treatability of the error

than on the degree of directness of the corrective feedback. Bitchener and Knoch (2010b), for

example, showed that advance ESL students who received indirect feedback were able to

increase their accuracy with English articles; because there are explicit rules governing the use of

English articles, these errors would be considered as treatable. Additionally, Ferris and Roberts

(2001) investigated the degree of explicitness that was needed in corrective feedback to enable

pre-freshman composition ESL students to correct verb, noun, article, lexical, and structural errors. For the study, the participants ($N = 67$) hand wrote opinion essays based on one of two readings that were typed, without changes, into a word-processing program. The participants, as members of intact classes, were randomly assigned to receive one of three treatments: (a) underlined and coded errors ($n = 28$); (b) underlined errors with no code ($n = 25$); or (c) no feedback ($n = 14$). Two weeks after writing the initial essay, the participants received their papers back and were given a set of instructions and 20 minutes to edit their essays. The researchers analyzed the students' corrections to their essays and found that both groups that received feedback were able to self-correct their papers significantly more than the no feedback group. Furthermore, the researchers did not find a statistically significant difference between the "editing success ratios" (Ferris & Roberts, 2001, p. 172) of the coded and uncoded feedback groups. Interestingly, the researchers did note that participants "were more successful in editing errors in the ''treatable'' category (verbs, noun endings, and articles) than the ''untreatable'' types (word choice and sentence structure [])" (Ferris & Roberts, 2001, p. 176). Based on these results, Ferris and Roberts suggested not only that failing to provide feedback to students is ineffective for helping students improve their writing accuracy enough to pass a writing course, but also that writing teachers may wish to consider giving less explicit feedback to their students, particularly since indirect CF was shown to be effective for helping students self-edit treatable errors.

Summary

The studies described in this section provide some indication about the effectiveness of direct and indirect CF for improving ESL learners' written accuracy in new and revised texts.

However, studies such as Bitchener (2008), Bitchener and Knoch (2008, 2009a, 2009b, 2010a, 2010b) have focused on the accurate use of articles in narratives only, making it difficult to determine if the tendencies identified in the data would generalize to other linguistic structures and text types. That studies have found positive effects for focused and unfocused CF for improving learners' accuracy should encourage instructors to provide their students with corrective feedback on their written work. For those instructors who may be concerned with the amount of time involved in providing students with direct feedback (with or without metalinguistic information), the work of Ferris and Roberts (2001), which investigated the effectiveness of explicit and implicit feedback for improving students' written grammatical accuracy, is of particular interest. These studies contradict the work of Truscott and others who argue against the provision of corrective feedback to language learners and suggest that corrective feedback is of no use to L2 writers. It should be noted that these studies did not investigate the effectiveness of corrective feedback delivered via electronic media. This CF option is worthy of exploration, particularly since technology plays an increasingly prominent role in learners' daily lives.

Research on Electronically-delivered Feedback

Not all research that has been conducted on the impact of corrective feedback has been done with the traditional pen-on-paper medium; this topic has also been investigated by researchers in the field of computer assisted language learning (CALL). These studies have considered the effect of different types of feedback provided by a tutorial computer program for improving students' use of foreign language grammar and vocabulary (Heift, 2004) as well as for improving grammar and spelling in a foreign language (Heift, 2010). Heift and Rimrott (2008)

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investigated the impact of computer program-delivered feedback types for foreign language

spelling improvement, as well. Other studies (Byrne, 1997; McCabe, Doerflinger, & Fox, 2011)

have examined the impact of feedback provided to writers from a word processing program, as

well as how much of an impact feedback delivered via computer program has in comparison to

the pen-on-paper method (Yeh & Lo, 2009). Another study, Furnborough and Truman (2009),

considered how adult novice-level distance language learners use computer-delivered feedback

for assignments to become more confident in their use of the target foreign language. Although

some of the studies reviewed in this section were conducted with foreign language rather than

second language students, the research that has been conducted on electronically-delivered

corrective feedback (eCF) is not only useful for understanding the perceived benefits and

disadvantages of this corrective feedback option, but also for understanding what types of eCF

are most effective for improving L2 writers' accuracy.

Qualitative research conducted on eCF is useful for understanding learners' and teachers'

reaction to using this medium. Byrne (1997) described some of the benefits and limitations

identified through experience using word-processed feedback. Specifically, Byrne touted word-

processed CF as being more legible and thorough than traditional pen-on-paper CF, and she also

noted that, unlike audio CF (e.g. discussing the text in a conference), word-processed CF can be

re-read. Another advantage of word-processed feedback is that there is no tonal influence;

students do not perceive the feedback as being discouraging, which they might do if they hear

not only what is being said, but also *how* it is being said. Word-processed CF is not without its

limitations, however; Byrne (1997) considered instructors' typing skills, computer equipment,

and time constraints as factors that could hinder their ability to provide students with legible

thorough CF. Other factors that may affect the effectiveness of eCF include instructors' attitude toward it, as shown by McCabe, Doerflinger, and Fox (2011).

The faculty participants in McCabe et al. (2011) ($N = 91$) reported using eCF only occasionally for responding to student papers and admitted that eCF could contribute to student learning without imposing on their time. However, McCabe et al. (2011) noted that faculty members were more likely to agree with this statement if they had experience with it and used it frequently. Interestingly, the faculty participants also identified some potential problems with using eCF; they were particularly concerned with the possibility of it increasing the amount of time they spent responding to student work, and of it leading to lower student effort. Other potential negatives associated with eCF were the need for faculty to overcome their dislike of reading a computer screen, and faculty concerns that eCF could increase students' confusion because the students were unfamiliar with the technology. However, these complicating factors are issues that could be overcome in time, as both instructors and students increase their familiarity with eCF platforms; what is of primary importance is whether or not eCF is effective for enabling students to improve their writing. Fortunately, the work of Furnborough and Truman (2009) provided some information about this topic.

Furnborough and Truman (2009) reported qualitative data about how 43 adult, novice-level, distance language learners studying German, French, or Spanish in the United Kingdom use eCF on their assignments to develop their language and writing proficiency in the target languages. The participants, who were selected by the researchers based on their response to a pre-course questionnaire and their lack of prior experience with the target language, also completed a post-course questionnaire and participated in a telephone interview with one of the

researchers. Once the questionnaires had been collected and the interviews conducted, the researchers analyzed participants' responses for indications of how they considered feedback. Students who perceived corrective feedback as a tool were grouped together as group A ($n = 18$); students in group B ($n = 14$) viewed feedback to be a judgment of their abilities, and those participants in group C ($n = 11$) indicated that they did not pay attention to the feedback they received. The researchers were also able to identify affective characteristics for the students in each group, which may be useful for helping writing teachers to understand how to best communicate with their students in their feedback. Group A, for example, was characterized as forward-thinking because these students looked forward to completing future assignments. Although the students in group B were harder to characterize, the researchers noted that these students tended to use "must try harder" (Furnborough & Truman, 2009, p. 412) when talking about future assignments. Finally, the students in group C were characterized as anxious and uncertain language learners who used feedback as a mechanism to convince themselves of the impossibility of learning another language. Furnborough and Truman (2009) used these results to suggest that language teachers not only identify errors in their feedback, but also include some suggestions of learning strategies for helping their students understand and make use of their comments which, in turn, could improve their ability to learn and use the target language. The results and suggestions described in Furnborough and Truman (2009) are particularly pertinent when considering how eCF may help students improve their written work.

Improving Student Writing Via Electronically-delivered Feedback

The research on eCF has shown that feedback on assignments can be used by language learners to become more confident and accurate in the target language. Textual enhancement

and the pairing of highlighted text with metalinguistic feedback has been shown to be effective

for improving foreign language students' consideration of grammar, vocabulary, and spelling

errors in the target language (Heift, 2004, 2010; Heift & Rimrott, 2008). In Heift (2004), three

types of corrective feedback – metalinguistic, metalinguistic with highlighting, and repetition of

a highlighted incorrect section of text - were compared for four different grammar and

vocabulary exercises completed via a computer program according to how many times students

attempted to correct errors identified by the program in their completed sentence-level activities.

The participants for this study were students ($N = 177$) studying German in Canadian

universities. Students were identified as being either beginners ($n = 49$), advanced beginners ($n

= 105$), or intermediate-level learners ($n = 23$). Heift (2004) identified some interesting

tendencies about student preferences as well as the effectiveness of the different corrective

feedback types based on data for the study.

Heift (2004) reported that the participants in the study, who filled out self-report

questionnaires, expressed a preference for direct feedback, although it was noted that the

intermediate-level learners also indicated that they would like indirect feedback, as well. When

the three types of corrective feedback were compared for the amount of learner uptake they

elicited, which was defined as student attempts to correct errors, Heift (2004) found that

metalinguistic feedback and text highlighting was most effective, although metalinguistic CF

was statistically comparable. The results of Heift's (2004) study indicate that student

participants attended to the corrective feedback they receive and that they preferred more explicit

metalinguistic CF rather than having their errors highlighted and repeated for their consideration.

Therefore, Heift (2004) can be considered as evidence of student engagement in the writing

process as well as evidence for what type of eCF could be most effective for L2 writing instructors to use. Similar results were reported in Heift and Rimrott (2008).

Heift and Rimrott (2008) built upon the results of Heift (2004) by investigating the effectiveness of three computer-delivered CF types for prompting L2 students to correct spelling errors on computer-based language activities at the sentence level. Heift and Rimrott (2008) conducted their study with 28 beginner ($n = 14$) and intermediate-level ($n = 14$) university students studying German in Canada. As in Heift (2004), the three feedback types were: (a) metalinguistic with textual emphasis; (b) metalinguistic feedback; and (c) repetition of the student-produced sentence with the erroneous student production emphasized in bold font. The researchers found that repetition of errors was the least effective for getting students to either attempt to correct the error identified or to make the necessary correction to fix the error identified, the two criteria which constituted *uptake* for the study. The researchers found that the metalinguistic with emphasis type of eCF was the most effective for eliciting uptake, although the researchers also reported that there was no statistical difference between categories (a) and (b). Interestingly, the researchers reported that metalinguistic feedback was more likely to be ignored if it wasn't explicit; these data, then, help to clarify student expectations for corrective feedback in general, and eCF in particular. Further evidence of the effectiveness of direct eCF over indirect eCF is found in Heift (2010).

The research of Heift (2010), like Heift (2004) and Heift and Rimrott (2008), was conducted with students ($N = 10$) of German studying at a Canadian university. Unlike Heift (2004), however, Heift's 2010 study was conducted during a period of three semesters, a feature which makes the study longitudinal in nature. Heift (2010) compared the effectiveness of

computer-delivered metalinguistic explanations and metalinguistic hints for eliciting learner

uptake on sentence-level student productions completed via computer program for their German

course. For this study, uptake was classified as *successful* (e. g., the student made a correct

correction), *unsuccessful* (e. g., the student made an incorrect correction but then either made the

correct correction or clicked ahead to the next error identified), or *no uptake* (e. g., the student

did not attempt to correct the error, but either had the computer program solve for the error or

moved ahead to the next error identified). Interestingly, Heift (2010) found that metalinguistic

explanation and metalinguistic cues elicited the same distribution of uptake patterns for the

beginner students, but that metalinguistic explanations were more effective for prompting

advanced beginner and intermediate-level students to make the necessary corrections to the

errors identified. It is unclear from these results whether the corrections made at the word and

sentence level helped to make the student-produced texts more cohesive. Also, because the

study was conducted with a limited number of participants, more research is needed to determine

how generalizable the results might be. Despite these limitations, Heift (2004, 2010) and Heift

and Rimrott (2008) can inform L2 writing teachers and researchers about which type of eCF may

be effective for prompting textual editing for beginning and intermediate-level L2 students at the

sentence level.

Yeh and Lo (2009) also demonstrated that computer-delivered feedback can help adult

EFL students ($N = 50$) recognize errors in a piece of writing. The study, which was conducted

with 50 EFL students in Taiwan, compared the ability of students to correct a text written by an

EFL student after being given either eCF or traditional pen-on-paper CF. For the study, the

researchers randomly assigned participants to one of two English writing classes; the class

members were, therefore, assigned to either the experimental or comparison group as members of intact classes. The first phase of the study had students in both classes write papers about their favorite celebrities. These student-produced texts were reviewed and given feedback either as comments written directly on a printed copy of the essay or via an online annotator that had been developed by the researchers to evaluate participants' texts. The annotator allowed the person assessing the text to identify and label errors in a student-produced text; the five main error codes used for this study were: "(a) writing style; (b) document structure; (c) sentences; (d) words and phrases; and (e) agreement, tense, and voice" (Yeh & Lo, 2009, p. 886). Once the main type of error was identified, the reader could further categorize the type of error committed according to predetermined subcategories although it is unclear from the article how these subcategories were determined by the researchers. This procedure was repeated for another paper written as part of the class assignments. Once the classes had each received two sets of feedback, students in both classes were asked to provide feedback on the same student-generated essay according to a printed set of researcher-generated instructions. Yeh and Lo (2009) found that those students who received eCF were better able to recognize writing errors in the essay provided. The researchers used their results as evidence of the effectiveness of eCF for enabling students to recognize and correct errors in writing. Despite these promising findings, it is still unclear whether students would be able to make use of their improved abilities when generating new texts themselves.

Research on Audio-recorded and Screencast Corrective Feedback

In addition to research on the effectiveness of computer programs to provide corrective feedback that helps writers improve their accuracy, there have been a few studies which

investigated the effectiveness of audio-recordings (e. g. MP3s) and screencasts for improving L2 writers' accuracy. Butler (2011) conducted a qualitative investigation of student responses to the use of MP3 recordings, which were paired with minimal textual mark-ups and a completed assessment rubric. The participants ($N = 112$), who were enrolled in a Media Law class at an Australian University, received either traditional pen-on-paper or MP3 feedback on a 2000-word written group assignment; unfortunately, Butler (2011) did not explicitly indicate how many students received each feedback type. Those participants who received the MP3 feedback via e-mail also received a link to an online survey designed to gauge their subjective responses to the electronic feedback. Butler (2011) found that of the 38 MP3 respondents: (a) 100 % of the respondents thought it was an effective feedback medium; (b) 92 % had no difficulty accessing the feedback; (c) 50 % listened to the recording more than once; (d) 100 % thought it was effective for helping their understanding of why they earned the recorded grade; and (e) 95 % thought the MP3 recording was more effective than pen-on-paper feedback. Butler (2011) used the results to suggest that MP3 recordings are a viable means of delivering feedback to students. Interestingly, it was also noted that the amount of time it took the instructor to mark up and record the audio feedback was similar to the amount of time it took to hand write comments on students' assignments. Although Butler (2011) was not a quantitative study and did not inform us of the ability of L2 students to use such feedback to improve their written accuracy, it nonetheless indicated that students who received the audio recordings listened to and understood the feedback that they were given.

Séror (2012) provided insight into how screencast technology, or "digital video-recordings of a computer's on-screen activities" (Séror, 2012, p. 106) can be used to deliver

useful feedback to students. Rather than reporting on quantitative or qualitative research, however, Séror (2012) reported observations from the author's own experiences using JING, one of several screencast programs available, with his L2 writing students, as well as examples of students' reactions to the technology. Séror (2012), then, is limited in its usefulness for enriching an understanding of how this technology can contribute to L2 student learning and their ability to improve the sentence-level accuracy of their written work. Indeed, research that focuses on this topic is scarce.

Mathisen (2012) conducted qualitative research into student ($N = 92$) responses to screencast feedback delivered through JING. An interesting feature of this study is that it considered student responses from a variety of academic programs at the university where it was conducted. Results from the survey administered to students indicated that the students considered the JING feedback to be clear, motivating, and helpful to their learning. It is unfortunate that a more detailed account of how the language students who participated in this study ($n = 7$) used the JING feedback to attain better accuracy on their written work was not included in the report. It is also important to note that rather than suggesting that screencast feedback could replace WCF and other types of feedback modes, Mathisen (2012) suggested that this technology could be a useful supplement to other types of feedback.

Studies that have looked into the impact of CF delivered via MP3 audio recording (Butler, 2011) or screencast (Mathisen, 2012; Séror, 2012) have failed to investigate how effective this technology is for improving grammatical accuracy for students' revised or new texts. While Butler (2011), Mathisen (2012), and Séror (2012) seem to support the use of audio-recorded and screencast feedback for improving student writing, the data was gleaned from

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native speakers (Butler, 2011), from a small number (*n* = 7) of foreign language learners (Mathisen, 2012) or is qualitative and anecdotal in nature (Mathisen, 2012; Séror, 2012). There is a need, therefore, to conduct more rigorous empirical research to determine how effective corrective feedback delivered via screencast is in comparison to the traditional pen-on-paper method for improving written accuracy. Such research will contribute to our understanding of how screencast feedback helps improve written accuracy for L2 learners specifically and will contribute to our understanding of how corrective feedback may be used to enhance L2 acquisition.

Discussion

The field of L2 writing pedagogy is influenced by several language and learning theories that have evolved through the years. Today's L2 writing students are no longer expected to demonstrate their L2 writing proficiency simply by copying sample texts using good penmanship, proper spelling, and correct sentence structure as was advocated by behaviorists and product-oriented writing approaches. Instead, process-oriented approaches and cognitive theories engage learners in a recursive process of planning, writing, and revising using one or several feedback channels, which often includes teacher-generated CF. Interestingly, not all language theories advocate the provision of such feedback.

Practitioners who adhere to the principles and methods of input-only instructional models such as Krashen and Terrell's (1983) monitor model, for example, believe input should be sufficient for L2 learners to acquire a language; these instructors would not overtly correct their students because such correction could, theoretically, increase their anxiety and, therefore, willingness to express themselves in the target language, particularly when speaking.

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Additionally, Krashen and Terrell (1983) downplayed the necessity of L2 learners to produce texts in the L2 because such an activity does not encourage comprehensible input. The input and affective filter hypotheses were applied to L2 writing instruction in studies conducted by Perez-Vidal and Juan-Garau (2011) and Sasaki (2004, 2007, 2011). Although input was shown to be effective for raising L2 learners' writing fluency and lexical complexity in these studies, participants' grammatical accuracy did not improve. Truscott (1996, 2007, 2010) also advocated using input-only approaches for L2 writing classes, but the lack of original research does little to support the applicability of the Natural Approach for improving grammatical accuracy in L2 writing. Even Truscott and Hsu (2008), which was designed to showcase the ineffectiveness of CF for improving L2 student texts, reported that corrective feedback actually helped students produce more accurate revised texts. Furthermore, studies that have investigated the influence of L2 input alone on writing (Storch, 2009; Zhang & Mi, 2010) found that this approach to improving composition was ineffective for improving students' accurate grammar usage. These findings are even more significant because L2 students have expressed their interest in receiving feedback in order to improve their writing (Amrhein & Nassaji, 2008; Bifuh-Ambe, 2009; Huang, 2010, Karathanos & Mena, 2014). There is, therefore, little evidence to support the application of the Natural Approach and its constitutive hypotheses to improving grammatical accuracy in L2 writing courses.

Research into the effectiveness of the output and noticing hypotheses has shown that noticing and output activities can help students incorporate native-speaker grammatical reformulations (Adams, 2003), but the quality of students' noticing appears to be affected by their proficiency level in the target language (Qi & Lapkin, 2001). In the interest of making

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rapid gains in grammatical accuracy in a limited amount of time, L2 writing instructors may consider providing corrective feedback to their students. Fortunately, there are studies that provide empirical evidence to show that L2 students who receive corrective feedback, WCF in particular, improve their written grammatical accuracy in revised and new texts. Although some studies have investigated the effectiveness of WCF for improving several linguistic features (Ellis et al., 2008; Sheen et al., 2009), the majority of research reported on in this paper focused on improving L2 students' use of English articles (Bitchener, 2008; Bitchener & Knoch, 2008, 2009a, 2009b, 2010a, 2010b). The studies reviewed herein tend to support the use of direct WCF on specific or limited linguistic items when reviewing beginning, intermediate, and advanced proficiency student texts; direct WCF may be paired with metalinguistic information to further assist students' processing of the corrective feedback they receive. Similar trends are evidenced in the research into eCF coming from the field of CALL (Heift, 2004, 2010; Heift & Rimrott, 2008), which has reported improvement in the sentence-level spelling, grammar, and vocabulary of student writers.

Although there are some studies which have investigated the effectiveness of computer program-generated eCF, there are a limited amount of studies that have looked into the effectiveness of teacher-generated eCF, such as MP3 recordings or screencasts, for improving the grammatical accuracy of L2 student writing. Furthermore, the studies that have been published on these eCF options have not focused on NNES writers and tend to be qualitative or anecdotal in nature (Butler, 2011; Mathisen, 2012; Séror, 2012). As technology becomes increasingly prevalent in students' lives, it is worthwhile to quantitatively investigate whether

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teacher-generated eCF can help students effectively improve the accuracy of their written work, and how it compares to the published research on WCF.

Limitations

It is important to note the limitations to the research studies reviewed in this chapter. The research reviewed consists of recently published peer-reviewed articles on WCF and eCF for research conducted with adult L2 learners. A broader inquiry into the effectiveness of corrective feedback for adult L2 writers could consider the role of oral CF for improving learners' texts, as well as more studies published before 2000. Another limitation to this paper is that it did not extensively discuss the existing critiques of research about corrective feedback. Although the research does exist (Guénette, 2007), it was not reviewed here for the sake of limiting the scope of the paper.

Conclusion and Directions for Further Research

Given the limited gains in accuracy evidenced in studies on input, output, and noticing activities, L2 writing instructors should feel justified providing corrective feedback to their students. Not only does this instructional strategy respond to students' desire for such input, but there are also several studies supporting the use of corrective feedback in writing classrooms to help students improve their grammatical accuracy, and particularly their use of English articles, in a short amount of time. As technology is used more extensively by students and teachers, quantitative research into effective eCF practices for L2 writers is merited. A study that compares the effectiveness of traditional WCF and screencast-delivered CF for improving NNES learners' use of English grammatical features, for example, would add a new dimension to the research about corrective feedback on this topic. Screencast feedback has the potential to inspire

a great deal of research, particularly because it has not yet been extensively examined. Such

research will not only contribute to theoretical debates about the value of corrective feedback for

NNES learners, but will help identify best practices for teachers who wish to make use of

screencasting with their writing students.

CHAPTER 3: RESEARCH METHODOLOGY

Statement of the Problem

The review of research clarified what is valued in academic writing and presented studies that demonstrated that corrective feedback can help adult non-native English speakers (NNESs) write more accurately, whether for revision or for new writing assignments. Furthermore, studies conducted on electronically-delivered feedback for language learners supported the findings of researchers in the field of second language acquisition (SLA) that corrective feedback (CF) is effective for improving student-produced texts. While the literature investigated the efficacy of different types of pen-on-paper and computer program feedback, limited empirical research has been conducted on the corrective feedback potential of screencasts. It is possible that CF delivered to NNES students via screencast can positively impact their attention to and correction of sentence-level grammatical errors. For instructors of a tech-savvy population of students, validation of such a feedback instrument may prompt and enable them to deliver more effective CF which will empower their students to become more accurate, proficient writers in English.

Research Questions

The research questions for this study were:

1. Is researcher-generated CF delivered via screencast more effective than researcher-generated CF delivered via pen-on-paper for improving NNESs' accurate use of English definite and indefinite articles on revised compositions?

2. Is there evidence of learning from researcher-generated CF, as measured by comparing the number of errors with English definite and indefinite articles from Paper A, Draft 1 (PAD1) to Paper B, Draft 1 (PBD1)?

3. Is researcher-generated CF delivered via screencast more effective than researcher-generated CF delivered via pen-on-paper for improving NNESs' acquisition of English definite and indefinite articles, as measured by comparing the number of errors from PAD1 to PBD1?

Research Design

This study used two experimental designs: a pretest-posttest design and a posttest-only design with proxy pretest (Campbell & Stanley, 1963). For the first research question, comparing data from PAD1 and Paper A, Draft 2 (PAD2) involved a true pretest-posttest design. The objective in using such a design was to keep the experiences of the treatment and comparison groups as similar as possible, with the exception of the treatment variable (Gall, Gall & Borg, 2007, p. 405). The second and third research questions compared data from PAD1 and PBD1 using a posttest with proxy pretest design. Unlike the true pretest-posttest-delayed posttest design used to measure performance on similar assessment tools to answer the first research question, the posttest only design with proxy pretest design allowed the researcher to compare the difference in error counts from dissimilar writing assignments, thereby allowing conclusions about the durability of treatment effects to be inferred from the data.

As participants in an experimental study, students were randomly assigned to either the treatment or comparison groups, a feature that bolstered the internal validity of the study (Gall, Gall, & Borg, 2007, p. 416). Participants in the treatment group received corrective feedback

pertaining to errors when using English definite and indefinite articles via screencast as well as written CF (WCF) on other writing errors. In contrast, participants in the comparison group only received WCF for all writing errors, but the corrective feedback addressing errors with English articles was highlighted on the students' papers to increase the likelihood of them attending to these errors. For this study, participants received the assigned feedback treatment once during their intensive English program (IEP) writing course, as they completed an assigned paper to satisfy the requirements of the class.

The study involved a single exposure to the treatment variable and three data collection points for each IEP writing class. The first paper collected, PAD1, was a rough draft of a descriptive essay submitted to the instructor after students had received peer review feedback. The second paper, PAD2, was the students' final draft of the descriptive essay that was submitted once students had edited their compositions according to the researcher and instructor feedback they received. Finally, PBD1 was a rough draft of a classification essay that was submitted to the instructor after students had received and processed peer review feedback. Because class enrollments at the IEP were limited to a maximum of 15 students, data was gathered from the same level of IEP writing class during three terms, a feature that enabled the researcher to gather data from 55 participants.

Threats to validity

This study, like any other research, encountered threats to both internal and external validity. Ensuring internal validity involved careful planning by the researcher so that the study actually measured what it is intended to measure (e.g. treatment effects) and reported results that could not be attributed to other factors (Fraenkel, Wallen, & Hyun, 2012). Care was also taken

to ensure accurate interpretation of the results to boost the external validity, or the applicability of the results to a larger population.

The researcher attempted to address potential threats to internal validity through design and methodology. The design and methods used to conduct the research ensured that the data gathered pertained to the participants' accurate use of the grammar feature in question and the effect of CF medium on improving their use of that feature. As such, participants in both the treatment and comparison groups only received one instance of corrective feedback, and they only had one opportunity to correct the errors addressed in the corrective feedback; this aspect of the study reduced the likelihood that improved accuracy could be attributed to other factors than the corrective feedback such as history, maturation, testing, instrumentation, statistical regression, differential selection, mortality, and the interaction of selection and maturation (Campbell & Stanley, 1963). The provision of WCF to the comparison group was another important feature of the design. The administration of an alternative treatment to the comparison group helped control for experimental treatment diffusion, compensatory rivalry, compensatory equalization, and demoralization that could have occurred if the comparison group had actually been a control group that received no researcher-generated feedback during the study (Gall, Gall, & Borg, 2007, p. 405). Thus, the single administration of comparable corrective feedback was deliberate and was designed to allow the researcher to make inferences about the effect of the corrective feedback medium on accuracy with English articles.

Another potential threat to internal validity, fidelity of treatment, was addressed by having the researcher deliver the corrective feedback to students. This feature helped to ensure consistency in the feedback given to participants. Furthermore, the subjects were enrolled in the

same IEP and should, therefore, have had similar exposure to English instruction for the duration of the study. To further reduce this internal validity issue, participants completed a survey that detailed their language backgrounds (e.g. first languages), their ages, the number of years they had formal instruction in English (e.g. in a classroom setting).

The researcher also guarded against threats to external validity when interpreting the results of data analyses for the study. For example, the small sample of students was judged to have a particular proficiency level according to the processes in place at a pre-university IEP associated with a specific university; it is likely, then, that the findings from the study would not generalize to students with different English proficiency levels at other institutions. Additionally, the study's focus on one grammatical feature meant the results might not generalize to other grammatical difficulties encountered in adult ESL student writing. Furthermore, the researcher scrutinized the results carefully to avoid attributing results to the treatment which were actually caused by the interaction of testing and treatment. For example, differences in accuracy scores might have been the result of learners' attention being drawn to grammatical accuracy issues by virtue of the feedback they received (Campbell & Stanley, 1963). However, because the CF given did not focus exclusively on accuracy issues, this threat to external validity may have been minimized.

Another consideration of the study that enhanced its validity was the use of empirical data that consisted of counts of errors participants made with the grammar feature in their initial and revised drafts on one assignment, as well as their initial draft of a second assignment. While the instrumentation contained some measurement error, the use of empirical data nonetheless ensured that subjective interpretations of the data were not made.

Research Setting

This study was conducted at an urban university in the southeastern United States. The university hosts a diverse population of students, including international students. According to the university website, international students who wish to enroll at the university must submit a minimum passing score on one of several possible English language proficiency tests including the internet-based test Test of English as a Foreign Language (iBT TOEFL), the paper-based TOEFL or the International English Language Testing System (IELTS). To help ensure their acceptance into the university, non-native English speakers may enroll in the IEP sponsored by the university.

The building that houses the IEP is on the university campus, which means its students are surrounded not only by other international students and the IEP instructors, but also by students enrolled in mainstream undergraduate and graduate courses at the university. According to the IEP website, students who enroll in the program are placed in classes based on their language proficiency as determined by their results on the TOEFL and a writing sample. Students complete their courses during seven-week terms, and all courses are designed to prepare students for the rigors of studying in an American English-language university. The IEP writing classes take a process-oriented approach to writing instruction that engages students in the writing of multiple drafts and revision following the reception of feedback.

Population and Sampling

This research was conducted with a convenience sample of intermediate-level students enrolled in a writing course offered by the university-sponsored IEP. More than 500 students are enrolled in the IEP, which has as an explicit objective the preparation of international students

for enrollment in undergraduate courses in American universities. The researcher was told that students who apply for admission into the IEP take an English proficiency exam and submit a writing sample in English; the results from these assessments are used to place applicants in one of four proficiency levels, ranging from novice to advanced, and one of two sublevels: beginner (B) or advanced (A). For this study, intermediate-level students enrolled in one advanced IEP writing class were randomly assigned to the treatment and comparison groups. The students in this study should have had a TOEFL score between 450 and 480, according to IEP administrators. Because this study used convenience sampling, the researcher recognized that the results may not generalize to adult ESL learners who: (a) are not intermediate-level learners; (b) are not enrolled in pre-university IEP writing courses; and (c) not living in the southeastern United States (Gall, Gall, & Borg, 2007).

Participants in this study were students in one of six advanced intermediate-level writing classes whose instructors agreed to assist the researcher. Contact with instructors of the writing classes was made possible because one of their colleagues was an acquaintance of the researcher. After the first term, one of the instructors whose class participated helped to recruit other interested intermediate-level writing teachers and to put them in contact with the researcher. Five different instructors agreed to assist in the research and data was collected from six classes during three academic terms between October 2014 and May 2015.

A total of 82 NNESs completed the demographic survey for this study. The surveys revealed interesting information about the 80 students who were eligible to participate in the research; two students were not 18 years old and were, therefore, excluded from the study, including analyses of demographic data. Of the 80 eligible participants, 46 (57.5%) were male

and 34 (42.5%) were female. The majority ($n = 62$, 77.6%) were between 18 and 29 years of

age, and more than half ($n = 41$, 51.9%) indicated they had studied English for between zero and

six years in a classroom setting. Thirty-three students (41.4%) reported that they had studied

English between seven and 14 years, and five students (6.3%) indicated they had studied English

for 15 years or more.

Data about participants' first languages were also collected. The surveys revealed that

the majority of students ($n = 61$, 76.3%) were native Arabic speakers. Additionally, six students

(7.5%) were native Spanish speakers, while Chinese, Japanese, and Portuguese were spoken by

three students (3.8%) each. Other languages spoken were Korean (two participants), and

German (one participant). Although information about participants' genders, ages, years of

formal English instruction, and first languages were not used as factors in the statistical analyses

conducted, the demographic data collected enabled the researcher to identify demographic trends

within the participating classes.

Because proficiency level has been shown to affect students' ability to use instructor

feedback (Qi &Lapin, 2001), the researcher collected English language proficiency data in the

form of overall Test of English as a Foreign Language (TOEFL) for each participating class. It

should be noted that despite the placement procedures described to the researcher, TOEFL data

were not available for all participants. The results of a one-way ANOVA conducted using the

data processing program Statistical Package for the Social Sciences (SPSS) revealed that the

average TOEFL scores between classes differed significantly from one another, $F(5) = 2.54$, $p =$

.04. This result suggested that some participants would be able to use CF better than others.

Therefore, a Tukey's B post-hoc analysis was performed on the TOEFL data to discern

significant differences in TOEFL scores between each pair of classes. Interestingly, the results from this procedure suggested that, in terms of average TOEFL score, no two classes were significantly different from one another with respect to average TOEFL scores. Therefore, the researcher concluded that participants should have been able to process the feedback they were given similarly, although individual variation in feedback processing could nonetheless have affected how students utilized the feedback provided. The scores listed in Table 2 present the TOEFL data for the 59 students with TOEFL data on file by class:

Table 2

TOEFL Data by Class

Class (Label)	*N*	Mean	Standard Deviation	Standard Error
Class A (TNFT2)	9	417.56	67.34	22.45
Class B (JKFT2)	5	471.80	36.21	16.19
Class C (TNST1)	11	467.36	22.63	6.82
Class D (LYST1)	13	429.69	39.96	11.08
Class E (TMST1)	9	439.33	40.22	13.41
Class F (BHSuT1)	12	418.50	46.01	13.28
Total	59	437.62	46.69	6.08

A total of 82 students completed the demographic survey but only 55 students turned in all three assignments used for this study. During the first term, error counts with English definite and indefinite articles were collected from 21 participants in two classes. During the second term, three classes and 31 students participated in the research, and during the third term, data were collected from three students in one class. Because the demographic and TOEFL data were

collected anonymously, it is difficult to determine the specific characteristics and proficiency levels of the 55 participants and, therefore, to what population the results of this research are most likely to apply.

Power Analysis

Before beginning the study, the researcher used a G* Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007) a priori analysis to determine that a minimum of 54 participants would be needed for the study if the data were analyzed using a 2 x 3 mixed design ANOVA to answer the three research questions. This sample size would have been sufficient for obtaining a power coefficient of 0.80 and a moderate effect size of $f = 0.25$, according to the planned assumptions for the study. More specifically, the *p*-value for this research was 0.05, which means that there was a five percent probability that the results obtained by the research were due to chance; therefore, a five percent chance that the null hypothesis would be rejected when it should have been accepted.

Instrumentation

For this study, the dependent variable (DV) was the number of times participants committed errors using definite and indefinite English articles in their assigned writings. *Error* was defined as instances when students used an indefinite article when a definite article should be used, instances when students used a definite article when an indefinite article should be used, instances when students used an article when one was not required, or instances when students did not use an article when one was required. To determine the impact of corrective feedback type on grammatical accuracy in writing, the number of errors made by students when using

English definite and indefinite articles on the first three assigned papers collected by the course instructor were compared using inferential statistical analyses in SPSS.

Data Collection Procedures

Once Institutional Review Board (IRB) approval for the study was obtained, the researcher began data collection. First, data about the students was obtained from the IEP administration and from a survey completed by the participants at the beginning of their writing course. This data enabled the researcher to better describe the participants' demographic characteristics. Of particular interest was the students' TOEFL grammar scores, as this data was used to determine if the treatment and comparison groups differ significantly in terms of grammatical proficiency with English. The surveys participants completed included questions about their first languages and the amount of time they had been studying English in a formal academic setting. After the surveys were completed, data collection from student-generated texts began.

Participants proceeded through the established procedures for composing their course assignments, which may have included brainstorming, outlining, composing, and participation in peer feedback sessions. Once students completed the course protocols for preparing their assignments, they submitted their work to the instructors for evaluation and feedback. The instructors then either hand-delivered or scanned and e-mailed the participants' papers to the researcher to allow the researcher to prepare and deliver CF on article errors. Participants were randomly assigned to either the treatment or the comparison group. Regardless of their group assignment, participants in the study received CF on article errors only from the researcher and

only on the first assignment. Students who were randomly picked to be in the treatment group - the group that got screencast CF (SCF) - only received one e-mail from the researcher.

For this study, CF was delivered either as SCF combined with written CF (WCF) or exclusively as WCF. Participants in the treatment group received SCF from the researcher pertaining to errors when using English definite and indefinite articles via screencast as well as WCF from their instructors on other writing errors. The combination of WCF and SCF ensured that the participants in the SCF group were treated ethically and received the help they need to improve their written English. In contrast, participants in the comparison group only received WCF for all writing errors, but the corrective feedback addressing errors in definite and indefinite article usage given by the researcher was highlighted on the students' papers to increase the likelihood of them attending to these errors.

The researcher worked closely with the course instructors to ensure the grammatical WCF was as similar as possible to the corrective feedback typically given within the IEP program in type and scope. For instance, instructors indicated they usually provide students with coded indirect feedback on grammar errors with metalinguistic descriptions, and this practice was observed by the researcher. It should be noted that the amount of metalinguistic information about English articles provided to the students in both the treatment and comparison groups was greater than what students typically receive. It was determined that additional metalinguistic information should be given to the SCF group so as to best utilize the incorporation of audio and visual features of screencasting. To prevent giving the SCF group any additional metalinguistic explanations that could unfairly enhance students' abilities to correct their errors, the researcher provided the same scope of metalinguistic information to the participants in the WCF group.

After the researcher finished giving feedback on articles on participants' papers, she made copies of the compositions. Participant names were blacked out on the copies and replaced with a code to protect participant identities. The number of errors with English articles each participant made was then recorded in SPSS. The papers that participants handed in were returned to the teachers who gave feedback on all other errors except article errors and, finally, the teachers returned the papers to their students for revision. On the day participants received their papers back from their teacher, the researcher e-mailed participants in the treatment group their individual feedback for consideration. Whether participants accessed or used the feedback was each participant's choice.

Although it was possible for the instructors to give the original papers to the researcher in the morning and to receive them back in the afternoon of the same day for most of the assignments, adjustments were made to ensure feedback was delivered in a timely manner and that classes could proceed according to schedule. Specifically, during the second round of research activities, PAD1 was handed in on a day when the researcher was unable to complete the feedback and return the papers on the same day before the instructors finished teaching. Therefore, the students' papers were scanned and sent to the researcher, who was then able to print out the papers and give feedback on article errors. The printed copies of the papers with researcher-generated feedback were stapled to students' original papers containing teacher-generated feedback.

Once participants had the chance to review the feedback and revise their compositions, they turned in a revised draft (PAD2) to their teachers. The instructors then gave the papers to the researcher to copy or scanned copies of each paper and e-mailed the scans to the researcher. The researcher blacked out participants' names on the copies and replaced the names with participants'

individual codes. Next, the number of errors each participant made with English articles on PAD2 was recorded in SPSS. The final data collection activity took place when the researcher collected copies of PBD1 that participants turned in to their instructors for feedback. As with the previous papers, the researcher either made or received copies of these compositions and replaced participant names with individual codes. The number of article errors made on PBD1 by each participant was recorded in SPSS. Finally, after the data from PBD1 were collected, data analysis began. Results of the analyses are reported in Chapter 4.

CHAPTER 4: RESULTS

Introduction

This chapter describes the analyses conducted using the data-processing program Statistical Package for the Social Sciences (SPSS) to determine whether there is a significant difference between traditional written corrective feedback (WCF) and screencast feedback (SCF) for helping intermediate-level non-native English speakers (NNESs) use English definite and indefinite articles with greater accuracy when writing academic papers. Descriptive statistics about the variables in the study are discussed and the results of data analyses including parametric tests, non-parametric tests, and effect size calculations are presented. The chapter concludes with a summary of the analyses and findings.

Analyses of Statistical Assumptions

To determine whether it would be possible to answer the research questions for this study using parametric tests, the data were subjected to tests of normality and homogeneity. Analyses showed that the difference between error scores on Paper A, Draft 1 (PAD1) and Paper A, Draft 2 (PAD2) was not normally distributed, $SW(55) = .94$, $p = .01$. The difference score data were slightly positively skewed ($g_1 = .61$) and leptokurtic ($g_2 = .48$), indicating that the data were slightly asymmetrical and peaked in their distribution. The data also contained one outlier, a difference in error scores that was greater than 11. Additional analyses were conducted to determine if the difference scores between PAD1 and PAD2 for each factor level (SCF and WCF) of the independent variable (IV) *feedback type* were normally distributed. The difference scores for the SCF group were positively skewed ($g_1 = .89$), leptokurtic ($g_2 = 2.30$), and included one outlier, a paper with a difference score greater than 11. Although the difference scores for

the WCF group did not contain any outliers, the data were positively skewed ($g_1 = .32$) and platykurtic ($g_2 = -0.63$). Thus, the researcher concluded that the difference between error scores from PAD1 and PAD2 violated assumption of normal distribution. Similar conclusions were reached for the difference scores from PAD1 to Paper B, Draft 1 (PBD1).

Analyses revealed that the difference in error scores between PAD1 and PBD1 was also not normal, $SW(55) = .9$, $p < .001$. For this set of data, the difference score data were negatively skewed ($g_1 = -1.41$) and leptokurtic ($g_2 = 3.04$), indicating the data were asymmetrical and peaked in their distribution. Results of analyses also revealed that the difference of error scores for each feedback group between PAD1 and PBD1 were not normally distributed. The difference in scores for the SCF group were negatively skewed ($g_1 = -1.47$) and leptokurtic ($g_2 = 3.50$). The data for the WCF group were also negatively skewed ($g_1 = -1.38$) and leptokurtic ($g_2 = 2.80$). Both the SCF and WCF groups' difference scores were similarly negatively skewed and peaked in their distributions. Furthermore, analyses of stem-and-leaf plots for the difference scores between PAD1 and PBD1 showed there were four outliers. The difference scores for the SCF group contained three outliers, difference scores that were greater than 11, and the WCF group contained one outlier, a paper with a difference score that was greater than 16.

Despite the non-normal distributions of both the treatment and comparison groups, Brown-Forsythe Tests of Equality of Variances showed that the variances between the two treatment levels were homogeneous for PAD1 ($F (1, 49.03) < .001$, $p = 1.00$), PAD2 ($F (1, 46.74) = 1.11$, $p = .30$), and PBD1 ($F (1, 51.48) = .001$, $p = .97$). The researcher examined homogeneity of variance using Brown-Forsythe Tests because the two IV groups had unequal sample sizes.

The results of the preliminary analyses had important consequences on the inferential statistical analyses conducted with the data. Because statistical assumptions for parametric tests were not met, using an Analysis of Variance (ANOVA) alone may have resulted in a Type I or Type II error. Therefore, non-parametric analyses and effect size calculations were also used to analyze the data for each research question. Specifically, the Wilcoxon Signed Ranks test was used to make within-groups comparisons when data were not normally distributed (e.g., when comparing the difference in errors between PAD1 and PAD2), and the Mann-Whitney-Wilcoxon (also known as the Mann-Whitney U) test was used to make between-groups comparisons between the SCF and WCF groups (Lomax, 2007). Finally, Cohen's (1988) *d* was calculated for each set of data to clarify the practical significance of the results obtained. Outcomes of the parametric, non-parametric, and effect size analyses as they related to each of the three research questions are reported below.

Results of Inferential Statistical Analyses

Research question one

Research Question 1 asked if researcher-generated CF delivered via screencast was more effective than researcher-generated CF delivered via pen-on-paper for improving NNESs' accurate use of English definite and indefinite articles on revised compositions. This research question investigated the differences in the mean scores of PAD1 and PAD2 between the SCF and WCF groups using a pre-test post-test design. The results of a 2 x 2 mixed design ANOVA showed no interaction between feedback type and paper that would explain the difference in error counts seen on the two papers, $F(1, 53) = .45$, $p = .50$, $\eta_p^2 = .01$. Although no interaction between feedback type and paper was detected, the ANOVA did indicate that there was a main

effect of paper type on the number of errors made with English definite and indefinite articles, $F(1, 53) = 6.37$, $p = .02$, $\eta_p^2 = .11$. Finally, the results showed that regardless of paper, feedback type did not have an effect on the number of errors made, $F(1, 53) = .21$, $p = .65$, $\eta_p^2 = .004$. However, because it was known that the data for both groups on PAD1 and PAD2 violated assumptions of normality, the researcher examined the data using non-parametric tests, as well.

First, the Wilcoxon Signed Rank test showed a significant main effect for paper type on the number of errors made by participants on PAD1 compared to PAD2, $z = -2.09$, $p = .04$. This result indicated that participants made more errors on PAD1 than on PAD2. Additionally, a Mann-Whitney U test showed that CF type had no effect on the number of article errors made, $z = -.93$, $p = .35$. In the interest of conducting thorough analyses, the researcher also conducted tests of simple main effects with the PAD1 and PAD2 data. These tests confirmed that the median of differences from PAD1 to PAD2 for the SCF group was not significant, $z = -1.46$, $p = .14$. Similarly, the difference in ranked scores on PAD1 and PAD2 for the WCF group was not significant, $z = -1.52$, $p = .13$. The results of the non-parametric analyses, therefore, confirmed the findings of the 2 x 2 ANOVA, and supported the conclusion that feedback type does not have a significant effect on participants' ability to use English articles with greater accuracy on revised compositions.

To ensure proper interpretation and to determine the practical significance of the results, Cohen's (1988) d was calculated to compare the number of errors between the two papers. The result of this calculation indicated that the effect of receiving one instance of feedback had a small positive effect on the participants' ability to use English definite and indefinite articles correctly on the second draft of an academic paper, $d = 0.18$. Although participants in both the

SCF and WCF groups made fewer errors on the second draft than on the first, given the results

obtained from the statistical analyses conducted, the researcher concluded that researcher-

generated CF delivered via screencast was not more effective than researcher-generated CF

delivered via pen-on-paper for improving NNESs' accurate use of English definite and indefinite

articles on revised compositions.

Research question two

The second research question sought to determine whether participants would

demonstrate evidence of learning after receiving researcher-generated CF on English articles. To

answer this question, the researcher compared the average number of article errors on PBD1 to

PAD1 in a post-test only design with proxy pre-test using a paired samples t-test. The paired

samples t-test showed that the average number of article errors made by participants increased

from PAD1 ($M = 4.00$, $SD = 3.87$) to PBD1 ($M = 5.49$, $SD = 5.51$), $t(54) = -2.17$, $p = .03$. These

results indicated that not only did participants make more errors on PBD1 than they did on

PAD1, but the difference in average error count between the two papers was significant.

However, the non-normal distributions of the data required non-parametric tests to be used as

well.

The results of the non-parametric Wilcoxon Signed Ranks test conducted showed no

significant difference between the medians of ranked errors for PAD1 and PBD1, $z = 1.7$; $p =$

.09. These results do not support the results obtained from the parametric tests that compared the

average number of errors on each paper. However, because it is known that the error counts for

the two papers are skewed, comparing medians yields a better within-group comparison. As the

results of non-parametric analysis contradicted the findings of the parametric tests, the researcher

used calculations of effect size to better understand the practical implications of the findings. The Cohen's (1988) *d* statistic calculated with the data suggested that the effect of receiving one instance of feedback had a small effect on the participants' ability to use English definite and indefinite articles with greater accuracy on a new composition, $d = 0.29$.

Given the results of the parametric, non-parametric, and effect size calculations, the researcher concluded that one instance of researcher-generated, indirect, metalinguistic corrective feedback did not lead learners to demonstrate evidence of learning how to use English articles with greater accuracy on a new composition.

Research question three

The third research question sought to determine if the SCF group demonstrated greater longevity of CF effects when writing a new composition than the WCF group. To answer this question, the number of errors each group made on PAD1 and PBD1 were compared and analyzed to determine which group demonstrated the most improvement from PAD1 to PBD1. First, the researcher analyzed the data using a parametric, mixed design 2 x 2 ANOVA. The ANOVA showed that there was no interaction between feedback type and paper that would account for the difference in error counts seen on the two papers, $F(1, 53) = .001$, $p = .97$, $\eta_p^2 < .001$. Although no interaction between feedback type and paper was detected, the ANOVA did indicate that there was a main effect of paper type on the number of errors made with English definite and indefinite articles, $F(1, 53) = 4.53$, $p = .04$, $\eta_p^2 = .08$. Finally, the results showed that regardless of paper, feedback type did not have an effect on the number of errors made, $F(1, 53) = .001$, $p = .98$, $\eta_p^2 < .001$. Thus, parametric analyses indicated that the effect of feedback type on the number of errors made was not significant. As with the first research question,

because it was known that the data for both groups on PAD1 and PBD1 violated assumptions of normality, the researcher examined the data using the non-parametric tests, as well.

The results of a Mann-Whitney U test showed that CF type had no effect on the number of article errors made, $z = -0.27$, $p = .79$. Not only did this finding support the findings of the 2 x 2 ANOVA, given the non-normal distribution of the data, the results of the Mann-Whitney U test provided a better within group comparison because it compared differences in median ranked scores for the two papers. As noted in the analyses for the second research question, a Wilcoxon Signed Ranks test revealed that the type of paper written also did not have an effect on the number of article errors made, $z = 1.7$, $p = .09$. In the interest of thoroughness, the researcher also conducted tests of simple main effects with the PAD1 and PBD1 data. These tests confirmed that the median of differences from PAD1 to PBD1 for the SCF group was not significant, $z = 1.16$, $p = .25$. Similarly, the difference in ranked scores on PAD1 and PBD1 for the WCF group was not significant, $z = 1.40$, $p = .16$. These results confirm the results obtained from the parametric tests, and indicated that there was no difference between CF types for improving participants' accuracy with English definite and indefinite articles on new compositions.

To ensure proper interpretation and to determine the practical significance of the results, Cohen's (1988) d was calculated to compare the effect size of feedback type on improvement with English articles. The result of this calculation indicated that the effect size for feedback type on improvements from PAD1 to PBD1 was very small, $d = 0.01$. Therefore, given the results obtained from the statistical analyses conducted, the researcher concluded that the type of

researcher-generated CF did not have an effect on participants' ability to improve their accuracy with English definite and indefinite articles on new compositions.

Post Hoc Power Analysis

Because no interaction effects were found, the researcher conducted G*Power post-hoc analyses to estimate the sample sizes that would be needed to detect an effect for each of the research questions (Faul, Erdfelder, Lang, & Buchner, 2007). For the first research question, 226 participants would be needed to detect an effect given the achieved $\eta_p^2 = .01$, a power coefficient of .80, and an alpha level set at .05. To detect an effect for the second research question, with a power coefficient of .80, $p = .05$ and an achieved effect size of .29, a minimum of 96 participants would be needed. However, because the achieved partial eta squared was so small ($\eta_p^2 < .001$), no reasonable sample size could be obtained to detect an effect for the third research question given a power coefficient of .80, and an alpha level set at .05.

Discussion

Results of the statistical analyses conducted with the error count data gathered for this study indicated that students who received indirect, metalinguistic SCF did not show significantly more improvement when using English articles in revised or new compositions than students who received indirect metalinguistic WCF on their article errors. Although participants in both groups did show improved accuracy on their use of English articles in a revised composition, the difference in the improvement between the two groups was not statistically significant.

Interpreting the results of data analysis conducted for the second research question was more difficult because of the different results obtained with parametric and non-parametric tests.

Whereas parametric analysis indicated that the participants did significantly worse on PBD1 than on PAD1, the non-parametric test results indicated that the difference in median scores for the two papers were not significantly different with the alpha level set at .05. Had the alpha level been set at .10, however, both the parametric and non-parametric results would have achieved significance. It can be said, then, that although the difference between the parametric alpha ($p = .03$) and the non-parametric alpha ($p = .09$) is noticeable, it is not very big. Given the non-normal distribution of the data, it is preferable to draw conclusions for the second research question based on the non-parametric test results. Specifically, the researcher concluded that one instance of CF does not help NNES students use English definite articles with improved accuracy on new compositions. Additionally, analyses conducted to answer the third research question showed that participants in both groups produced new compositions with similar amounts of article errors. This finding that suggests that the information provided to students from one instance of feedback is not being retained regardless of whether the CF is delivered via screencast or as written commentary.

Although the results obtained did not indicate that there was a difference between the two types of CF for helping NNESs improve their written accuracy with English articles on both revised and new compositions, the results of this study do provide information about the nature of language learning and the role of feedback in that process. Finally, this study and its results suggest several new lines of inquiry, as discussed in the following final chapter.

CHAPTER 5: CONCLUSIONS

The purpose of this quantitative research study was to determine if there was a difference between two types of indirect corrective feedback for helping adult non-native English speakers (NNESs) use English definite and indefinite articles with greater accuracy when writing academic papers. Learning to write well is important for all students at the post-secondary level, and grammatical errors have been shown to not only be a persistent area of concern for NNESs but also to be particularly irksome to university professors who encounter them in student submissions (Huang, 2010). Providing feedback is all the more necessary because NNESs are unlikely to receive the linguistic assistance they need to improve the accuracy of their papers once they are enrolled in university-level courses (Moussu, 2013; Nan, 2012). Prevailing interest in correcting organizational, rather than linguistic, errors in student papers in university-level writing courses and tutorials means that writing instructors of NNESs enrolled in a pre-university intensive English program (IEP) must not only teach students about rhetorical patterns but also provide their students with feedback about language errors that may help students become more aware of the grammatical rules of English.

The practice of providing feedback on writing assignments is not without controversy within the field of second language acquisition (SLA). Supporters of the Natural Approach to language learning believe that the provision of corrective feedback for L2 learners is not necessary because, with enough exposure to the target language, learners' production would become native-like. It should be noted that the Natural Approach as proposed by Krashen and Terrell (1983) focuses on L2 learners' spoken language production, but advocates of this approach such as Truscott (1996, 2007) have extended its application to L2 writing instruction.

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While there is some evidence that exposure to the target language can help improve certain aspects of L2 learner writing (Sasaki, 2004, 2007, 2011), the work of Storch (2009) and Zhang and Mi (2010) suggested that target language writing proficiency could be advanced through the provision of corrective feedback (CF).   Indeed, there is evidence that NNESs use written corrective feedback (WCF) they receive to improve the accuracy of their writing (Ashwell, 2000; Chandler, 2003; Ferris, 2006; Truscott & Hsu, 2008). It should also be noted that CF does not have to be written to be effective. Studies have shown that students are able to use electronically-delivered corrective feedback to improve their written accuracy (Heift, 2004, 2010; Furnborough & Truman, 2009; Yeh & Lo, 2009). Despite the evidence that CF is effective for getting learners to notice and correct their written errors, there is limited quantitative evidence of the effectiveness of screencast corrective feedback (SCF) or how the effectiveness of SCF compares to that of traditional WCF for improving grammatical accuracy.

This study validated the use of SCF by using quantitative data to answer three research questions. For this study, the treatment group was comprised of participants who were randomly assigned to receive indirect, metalinguistic, focused SCF from the researcher on their article errors and WCF from their instructor for all other types of errors. In contrast, the participants in the comparison group received indirect, metalinguistic, focused WCF from the researcher on their article errors and WCF from their instructors on all other errors. Once the number of article errors each participant made on the three compositions used for this study were counted and recorded, the data were subjected to parametric and nonparametric statistical analyses. The results of the statistical analyses performed on the data demonstrated that there was no significant difference between the ability of students in the treatment and comparison groups to

use English articles with greater accuracy after receiving one instance of researcher-generated feedback on their article errors, whether on revised or new compositions. A brief discussion of the conclusions drawn for each research question will prepare a discussion of alternative explanations, the implications of this study, and directions for further research.

Summary of Results by Research Question

Research question one

The first research question focused on the difference in effectiveness between SCF and WCF for improving participants' use of English definite and indefinite articles on revised compositions. Based on studies conducted by a number of researchers (Bitchener, 2008; Bitchener & Knoch, 2008, 2009a, 2009b, 2010a; Storch, 2007), improvement in article accuracy was expected, but it was unknown which type of corrective feedback would help students make the most improvement. Once the error count data were collected, they were first analyzed using a 2 x 2 mixed design Analysis of Variance (ANOVA). The results of the ANOVA showed no interaction between corrective feedback and paper on the difference in the number of errors observed on Paper A, Draft 1 (PAD1) and Paper A, Draft 2 (PAD2), which were two consecutive drafts of a descriptive essay. Additionally, the between-subjects statistical data did not show that either type of feedback helped participants use English articles with greater accuracy on revised compositions. However, because it was known that the data for PAD1 and PAD2 were not normally distributed, the data were analyzed using non-parametric tests, as well. A non-parametric Wilcoxon Signed Rank test confirmed that CF type had no effect on the participants' ability to use English articles with greater accuracy on revised compositions. Additionally, both the parametric and non-parametric data analyses suggested that the type of paper was the most

important factor on participant performance. To ensure proper interpretation of these results and to better understand the practical significance of the results, the researcher calculated Cohen's (1988) *d*. The result of this calculation indicated that receiving one instance of feedback had a small effect on the participants' ability to use English definite and indefinite articles correctly on the second draft of an academic paper, $d = 0.18$. Therefore, analyses suggested that the type of CF received was not the most influential factor for improving participants' accuracy with English articles on revised compositions and the researcher failed to reject the null hypothesis.

Research question two

The second research question focused on whether participants would demonstrate evidence of learning from indirect researcher-generated CF, as measured by comparing the number of errors with English definite and indefinite articles from PAD1 to the first draft of a classification essay, Paper B, Draft 1 (PBD1). For this question, the researcher was interested in finding out if the process of receiving and using feedback on one paper would help students make fewer errors on a new composition. The existing research on the ability of feedback to improve student performance on new compositions suggested that students would be able to apply the article rules they attended to when revising one paper to a new composition, although this ability was associated more with the reception of direct CF than indirect CF (Bitchener & Knoch, 2010b).

The data obtained for this study indicated that participants in this study did not demonstrate improved accuracy with English articles on a new composition after receiving one instance of researcher-generated indirect, metalinguistic, focused feedback on their article errors. The results of a paired samples *t*-test conducted on the error count data for PAD1 and PBD1

showed that participants actually made significantly more article errors on PBD1 than they did on PAD1. As with the first research question, however, the non-normal distribution of the data necessitated analysis using non-parametric tests.

The results of the Wilcoxon Signed Ranks test contradicted the results obtained from the parametric analyses because they indicated that no significant difference existed between the median ranked scores of PAD1 and PBD1. Although this result could be considered problematic, given the non-normal distribution of the data, the non-parametric tests gave a better within-group comparison. Furthermore, the Cohen's (1988) d statistic calculated suggested that the reception of feedback had a small effect on students' ability to use English articles with greater accuracy on a new piece of writing, $d = 0.29$. The results of the analyses conducted with the data support the conclusion that improvements in article usage seen on revised compositions did not transfer to students' new compositions, and the researcher concluded that participants did not demonstrate evidence of learning how to use English articles more accurately and failed to reject the null hypothesis. Despite the overall lack of improvement in accurate article usage on new compositions, the researcher was nonetheless interested to determine if one group was able to use English articles more accurately than the other on PBD1.

Research question three

The third research question prompted the researcher to examine the number of article errors made by participants in the SCF and WCF groups to determine if there was a difference in the amount of change shown by each group; the researcher hoped to determine which type of CF was more effective for improving participants' acquisition of English definite and indefinite articles, as measured by comparing the number of errors from PAD1 to PBD1. Previous

quantitative research into this difference had not been conducted, so the researcher was not certain what the outcome would be. First, the researcher analyzed the data using a parametric, mixed design 2 x 2 ANOVA. The results of the ANOVA showed no interaction between corrective feedback and paper on the difference in the number of errors observed on the drafts of two different types of essays. Additionally, the between-subjects statistical data did not show that either type of feedback helped participants use English articles with greater accuracy on new compositions. However, because the researcher knew the data for both PAD1 and PBD1 violated the assumption of normal distribution, non-parametric tests and effect size calculations were carried out to ensure proper interpretation of the data. Based on data analysis conducted for the second research question, it was known that there was no significant difference between the medians for PAD1 and PBD1, and a Mann-Whitney U test revealed that CF type had no effect on the median ranked scores of the number of article errors observed. Based on these findings, the researcher determined that neither group had demonstrated more improvement than the other from PAD1 to PBD1. The results of the effect size calculation indicated that the effect of receiving one instance of feedback had a very small effect on participants' ability to use English articles accurately on a new piece of writing $d = 0.01$. Given the results of the analyses conducted, the researcher again failed to reject the null hypothesis and concluded that there was no significant difference between the CF types for improving participants' accuracy with English articles on new compositions.

Overall, the data suggest that there is no difference between WCF and SCF for improving participants' accuracy with English articles either when revising compositions or when writing

new compositions. Before examining the impact of the current study, it is important to consider alternative explanations for the results obtained.

Alternative Explanations

Although this study was designed to reduce threats to internal and external validity, as with any research, it is possible that factors other than those intended to explain the results obtained influenced the outcomes. To begin, the researcher designed the study under the assumption that students enrolled in writing classes in an IEP would be interested in using feedback provided to them to improve the accuracy of their written English, given the results of prior research (Bitchener Basturkman, 2006; Hennebry, Lo, & Macaro, 2012). It must be considered, however, that some of the participants in the study were not interested in writing in English, improving their use of English definite and indefinite articles, or both. Students who were not interested in writing in English would likely be less participatory in the study because they did not see the merit in improving their writing. Additionally, if participants chose to overlook the CF on article errors and not address the article errors identified, this would affect the error counts obtained and, consequently, the conclusions drawn from data analyses.

Overlooking the CF on article errors may have occurred for several reasons. First, the researcher designed the study under the assumption that the participants were accustomed to regularly verifying their university e-mail accounts and would, therefore, be aware of when the researcher e-mailed them if they had been randomly assigned to the SCF group. It is possible, however, that the participants did not access their university e-mail accounts during the study and did not, as a result, see the SCF feedback sent to them by the researcher. Furthermore, if the researcher's e-mail was diverted to participants' junk e-mail folder, this also would have

prevented the participants from accessing the feedback. Additionally, as suggested by Sheen (2007), it is possible that students felt overwhelmed by the amount of CF they received from the researcher and instructor. Students in this situation may have elected to attend to more direct CF provided to them or to focus on CF on language features that they felt more confident in addressing. Another possibility that is that the participants did not make use of the feedback on English articles provided to them because it was provided by the researcher rather than by their instructor. This must be considered because the researcher was unfamiliar to the participants. Participants in the study might not have had confidence that the researcher was giving them the correct information despite the fact that they could have asked their instructor to confirm and explain the feedback provided to them.

Other aspects of the study's design could have affected the conclusions reached. Differences between the SCF and WCF groups may not have been able to be detected because of the short duration of the study. The researcher designed the study to be conducted during the first three weeks of the participants' intermediate-level writing classes to mitigate the influence of instruction on the data collected. The researcher wanted to isolate the provision of feedback from class instruction on English definite and indefinite articles to reduce the possibility that grammar instruction would influence students' writing and, therefore, the data collected. While this aspect of the design may have reduced the amount of influence of instruction on the data, it also reduced the amount of exposure participants had to the feedback and, therefore, only reflects the results of a single exposure to the indirect, metalinguistic feedback on English articles provided by the researcher. It is possible that a study that involves repeated exposure to the SCF and WCF would provide data that would allow differences between the SCF and WCF groups to

be detected. In addition to the factors identified that would have affected the data collected, there are possible alternative explanations for the conclusions reached for each of the research questions.

For the first research question, it must be considered that the improvement seen on participants' revised compositions was not the result of students processing and using the corrective feedback on English articles provided to them by the researcher. This is a viable possibility because the research was not conducted in a laboratory setting, but rather took place in an active academic environment designed to assist NNESs with their English proficiency. Students may have received information about English articles during in-class activities or extracurricular activities such as tutoring sessions, writing labs, or discussions with fellow students. In other words, it is conceivable that students did not necessarily make use of the CF provided to them to improve their accuracy with English articles but instead received instruction that would have allowed them to improve their accuracy when using English definite and indefinite articles when revising their compositions.

For the second and third research questions, the increase in the number of errors with English articles could be attributed to the fact that participants were writing a different type of composition. The third paper collected, PBD1, was a draft of a classification essay, whereas the first two papers collected, PAD1 and PAD2 respectively, were drafts of a descriptive essay. Nonetheless, it must be considered that the classification essay required students to use English articles more than the descriptive essay. The increased need for English articles could, in turn, have contributed to the increase in the number of errors participants made. Although it was not included in the design of this study, comparing the ratio of article errors to the number of times

participants used articles in their compositions would help to confirm this possibility and merits consideration for future studies.

Another factor that could have affected the data used to answer the second and third research questions is the participants' awareness of the study's focus on article usage. This awareness could have lead them to attempt to use English articles more than they would have if they had not been participants in the research. It is also possible that the provision of feedback from the researcher heightened participants' awareness of articles and influenced them to attempt to use articles more than they would have if they had not been participating in the study. This reactive effect of participation would affect the external validity of the results obtained and make it difficult to generalize the results to other groups of intermediate-level NNES writing students (Campbell & Stanley, 1963, p. 5-6).

Finally, for all research questions it must be considered that the lack of differences in article accuracy observed between the treatment and comparison groups could be the result of the statistical procedures used to analyze the data. Non-parametric analyses that compared median ranked scores were necessarily used because of the non-normality of the data distributions and the unequal group sizes. However necessary, the use of non-parametric tests may have prevented any difference between the groups from being detected. It is important to consider the threat of this change in instrumentation to the internal validity of the study because it may have led the researcher to reach a different conclusion than the one that would have been reached if the data had been normally distributed and able to be analyzed using parametric tests.

Alternative explanations are important to consider because they can help identify areas of improvement that can be made in future studies. Despite the possibility that the data reflect the

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influence of factors besides the impact of the corrective feedback given by the researcher, the present study can nonetheless provide useful insights for teachers, administrators, and researchers.

Impact of the Study

This research study provides a better understanding of how one exposure to one of two types of indirect metalinguistic CF may influence the accuracy of intermediate-level NNESs when they are using English definite and indefinite articles on revised and new compositions. It was shown that students can use WCF and SCF equally well to improve their article accuracy on revised compositions, but that they may have difficulty applying the grammar rules targeted in implicit metalinguistic CF when writing new compositions, particularly if the new composition is of a different genre. This research not only contributes to existing notions in the field of SLA, it also suggests new research possibilities.

The theoretical framework that was most influential in shaping the research was cognitivism, and the results obtained support some of the notions proposed by cognitive theorists about the nature of language learning. With respect to McLaughlin's (1987) attention-processing model, the research supports the idea that learning a language requires practice. Although the participants were able to improve their accuracy with English articles on a revised composition, the presence of such errors on a new piece of writing demonstrated that one instance of revision was not sufficient for eliminating article errors from NNES writing. Article errors on PBD1 also led support to Anderson's adaptive control of thought theory, which postulated that a learner's knowledge of linguistic rules does not necessarily mean that they will be able to automatically produce language that respects those rules (Bitchener & Ferris, 2012). Although the CF on

article errors they received may have reminded the participants of grammar rules they had previously studied, it is clear that continued practice using English articles is needed if they wish to produce written English that is free of article errors. Finally, the research also lends limited support to the interactionist perspective of Pienemann's (1998) processability theory. Although the one-time provision of CF helped the participants to correct their article errors on revised compositions, it did not result in acquisition of this grammatical aspect of English.

In addition to contributing to cognitive theories of SLA, the study also supports the findings of many notable studies. Ashwell (2000), Chandler (2003), and Ferris and Roberts (2001) all reported that learners were able to use CF to revise and edit their written work, as did the current study. The results also support the findings of Heift (2004) and Heift and Rimrott (2008), who found that electronically-delivered CF was effective for helping language learners improve the accuracy of their written work. The results of the current research, then, support the idea that CF is useful to learners and helps them notice errors in their target language production (Adams, 2003; Schmidt, 1990, 1995, 2001; Swain & Lapkin, 2003). Aside from supporting previous research, the study also provides new insight about a specific type of feedback.

Unlike previous studies that have investigated and compared the effectiveness of direct, focused CF (Bitchener, 2008; Bitchener & Knoch 2008, 2009a, 2009b, 2010a; Sheen, 2007), direct unfocused feedback (Bitchener et al., 2005; Ellis et al., 2008; Sheen et al., 2009), and indirect, unfocused feedback (Bitchener & Knoch, 2010b; Ferris & Roberts, 2001) for improving NNESs' accuracy with English articles in narratives, the current research provides more information about the comparable efficacy of two types of indirect, focused, metalinguistic CF for treating English article errors for revised and new compositions of different genres. The

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results obtained suggest that intermediate-level NNESs are able to use this type of CF equally well to improve their article usage in revised academic papers. Unfortunately, as reported in Bitchener and Knoch (2010b), indirect CF was not associated with durability of treatment effects; participants in the current study did not appear to maintain their improved accuracy or apply the rules governing article usage in English to a new piece of writing of a different type. Thus, although the results of the study confirmed the usefulness of indirect CF for helping learners revise their writing, they did not indicate that accuracy improvements seen were very durable.

In addition to validating the use of indirect, metalinguistic CF, this is one of the first studies to use quantitative data to compare effectiveness of SCF and WCF for improving grammatical accuracy in NNES writing. The empirical results obtained suggest that the intermediate-level NNES participants who received SCF were able to make a similar amount of improvement as their WCF counterparts. This finding helps validate the use of SCF by teachers and empirically supports the possibility that SCF is a viable and effective way for teachers to give CF to their students. This research is important because although qualitative studies conducted by Mathisen (2012) and Séror (2012) showed that adult students generally reacted positively to receiving SCF feedback from their instructors, they did not report data that could help teachers understand how effective SCF was for improving grammatical accuracy compared to traditional WCF. Another finding of this study was that not only does SCF appear to be as effective as WCF for improving participants' accuracy with English definite and indefinite articles on revised texts, but it also has comparable longevity of effects. Unfortunately, both the SCF and WCF groups showed little evidence of learning or acquisition of the proper use of

English articles as a result of receiving their respective types of feedback, as evidenced by the increase in errors with articles on their new compositions. This result indicates that the participants used the SCF and WCF on English articles they received on PAD1 similarly as they composed their classification essays. More specifically, this study highlights the need to help students learn how to use the CF provided to them not only for making revisions, but also when they are in the process of composing new essays.

Future research into SCF will certainly clarify the potential contributions and limitations of this feedback option. Although it was hoped that some differences between the two feedback groups would be detectible for this study, the observed lack of difference may be interpreted as the possibility that SCF is just as effective as traditional WCF for helping students improve their accuracy with English articles. In fact, this conclusion is in keeping with numerous studies that report no significant differences in learning outcomes for students who receive content instruction via technological means compared those who are taught using traditional pedagogical techniques (Russell, 1999). As suggested in Morris and Chikwa (2014), a more systematic approach to incorporating SCF into classes may be merited in order for students and teachers to realize its full potential. Indeed, given the similar performance of participants in this study, a more systematic approach for incorporating feedback regardless of type must be considered. To improve students' understanding of how to best use CF, teachers and administrators should consider setting aside class time to help students understand how the feedback they receive on an assignment can inform them of their strengths and weaknesses when writing as well as how the feedback can be used to improve their accuracy on a new piece of writing. This type of instruction would not only improve NNES students' grammatical accuracy, but would also help

them become more self-sufficient learners of English, particularly if it is consistently infused into lessons. The findings from this research, therefore, are highly practical and can be used to inform and improve pedagogical protocols.

Strengths of the Study

This study had many strengths which help it to contribute to the field of second language acquisition. First, the study examined a debated issue in a real-world setting. Designing the study using actual students and assignments strengthens the practicality of the study and its results because it reflects actual student practices as well as teaching practices that might be used in the classroom. The use of enrolled students meant that data were collected from students of varied proficiency and motivation levels. This is important because it is possible that volunteer participants for a laboratory study would not represent the different levels of English proficiency or motivation levels of enrolled students. Furthermore, unlike research conducted in a laboratory setting, participants were not asked to do any tasks that they would not normally do as they progressed through the writing process in their intermediate-level writing course. In fact, the study was designed so that the only atypical factor that was introduced to the participants was the provision of feedback on English articles by the researcher. For the participants who received WCF from the researcher, this meant they had to process feedback in unfamiliar print that had been highlighted on their papers. The SCF recipients, on the other hand, would have only had to access the screencast video through their student e-mail account. These deviations from the typical procedure were designed to be minimal so as to provide insight into how effective the feedback provided was for the participants, to allow for comparisons between the two feedback types to be made, and to provide insight about how students typically use corrective feedback.

Although the research could have been conducted in a lab setting, the researcher was interested in conducting research that would be of greater practical significance so as to better inform teachers, administrators, and researchers about what to expect should they choose to use screencast feedback in their classes and studies.

It is worth noting that the design and execution of the research also contributed to the focus of the study. Based on the literature reviewed, the researcher was able to determine what type of written feedback to provide the participants given their overall proficiency level in English. Once the type of WCF to use had been determined, the researcher was able to provide the same type of indirect metalinguistic information to the participants randomly selected to receive SCF. The two types of feedback were, therefore, as similar in metalinguistic information as possible. Controlling for fidelity of treatment effects was another way the researcher maintained simplicity of design and execution. Rather than introducing the possibility of different teachers giving different types of WCF and SCF, the researcher provided the CF for the article errors. This feature helped to ensure consistency in the feedback given, an important consideration given the amount of time needed to complete the study and the number of different classes that participated in the research.

Another strength of the study is that the research addressed a persistent issue in NNES writing in a highly focused manner. Rather than examining the effectiveness of each type of CF for several grammatical issues that teachers may need to address in their CF, this study only looked at how effective the CF types were for improving participants' use of English definite and indefinite articles. This study confirmed that properly using English articles is troublesome for English learners and that providing feedback about article errors to NNES has merit because it

allowed them to improve their accuracy with this grammatical feature on revised compositions. Additionally, the decision to use indirect, metalinguistic feedback for treating article errors helps to fill a gap in the research. Therefore, the study not only confirmed that using English articles is problematic for NNES writers, but it also contributed to the discussion surrounding the provision of corrective feedback to NNES learners, a debated issue within the field of second language acquisition.

The focus on NNES participants and the collection of objective data are two final strengths to mention. First, the study focused exclusively on the effectiveness of SCF for NNES learners and therefore makes a definite contribution to the field of SLA. Previous research conducted by Mathisen (2012) only involved input from seven language learners and was of limited usefulness to SLA practitioners and researchers. Additionally, this study is among the first to investigate the effectiveness of screencasting for L2 learners using objective quantitative analyses. This means the analysis and the results reported were not subjective in nature, an aspect that distinguishes it from previous qualitative research that has been conducted on screencasting (Séror, 2012). This aspect of the research gives teachers, administrators, and researchers an objective basis of comparison when considering whether or not to use screencasting with their classes.

Weaknesses of the Study

Although great care was taken to employ a solid design for this dissertation research, as with all research, this study had weaknesses with respect to design and execution that merit discussion.

Ironically, the setting of the study, one of the aspects that was recognized as a strength, can also be considered a weakness because it affected participation, the duration of the study, and the interpretation of the data. Conducting the study in a laboratory setting would have ensured that participants completed every task required in the study. However, because the data was gathered from papers submitted by students actively enrolled in an intermediate-level writing course, and because there was no penalty associated with not turning in an assignment other than the consequences outlined in the course syllabus, there was no guarantee that participants would turn in the papers on time or at all. This aspect of the study required the researcher and the instructors to contact each other frequently to ensure papers were gathered from as many participants as possible. Not only did late assignments affect the researcher's ability to give CF to participants at once, it also affected the instructors' timelines for returning composition drafts. Additionally, there were several students who failed to turn in one or several of the composition drafts used in this study, thereby rendering their data unusable. Conducting the study in a real-world setting, therefore, led to a high attrition rate and an increase in the time demands placed on the instructors and the researcher. Not only was this stressful on the instructors and the researcher, it also meant that the study had to be conducted over a longer time than what would have been required from a lab-based study. This has important repercussions for data analysis because is possible that the data gathered reflected the influence of tutoring, writing workshops, or instruction.

The amount of time required to perform research activities in an active-classroom setting should also be mentioned. Although the presentation of research and collection of papers was designed to be as minimally invasive as possible for the students and their instructors, it is worth

noting that these activities required the researcher, the instructors, and the students to set aside time from their already busy schedules to conduct the study. It is possible that more instructors were interested in having their classes participate but could not make arrangements for this because they had other teaching demands to manage. Had the research been conducted in a laboratory setting, making arrangements to present the research and to collect and return assignments would not have been necessary. Instead, research would have been conducted as an extracurricular activity at a pre-arranged time and for a particular length of time, making conducting the study more convenient for the researcher, the instructors, and the participants alike.

Not only did the real-world setting of the research potentially affect participation in the study and the type of data gathered, it also limited the amount of discussion the instructors and researcher had about the CF on articles being provided. The researcher's lack of official affiliation with the IEP made her an outsider to the students and also prevented her from having formal or informal discussions with the instructors about the CF given because her office was not in the same building as the IEP. Despite the fact that researcher and instructors maintained open lines of communication for the duration of the study, it is possible that time constraints again contributed to the lack of dialogue about the CF provided by the researcher. Although the researcher was not contacted by the instructors with questions about the CF on English articles provided, it must be considered that these questions could have come up but were not communicated to the researcher because it would have required the instructors to access their e-mail or call the researcher to discuss any points of confusion – in short, it could have prevented the instructors from finishing their work in a timely manner and maintaining the pace of the

course. Similarly, the researcher, in order to interfere as little as possible with the typical class procedures and teaching styles being used, did not point out to instructors those sentences in participants' compositions where the researcher determined that an English article did not necessarily have to be used or omitted because the accuracy of the sentence could have been corrected by changing the noun from singular to plural or vice-versa. Thus, the demanding course schedule, the interest in maintaining quick turn-around times for assignments, and the researcher's interest to remain as minimally intrusive as possible could have had an effect on the comprehensiveness of the CF provided to students and, therefore, the data collected.

Another weakness to consider for this study relates to how much the participants actually accessed and how much they attended to the CF given to them by the researcher. Participants might not have attended to the CF on article errors because it came from the researcher and not their writing instructors; although the researcher is a native speaker of English, the participants might not have had confidence that the researcher gave them reliable feedback. Although the data collected gave some indication about whether participants used the CF to improve their accuracy when using English articles in compositions, whether participants chose to ignore the article CF, how often they may have done so, and why remains unknown. It is also possible that the researcher's assumptions about the participants were not correct. The researcher admittedly presumed, based on the literature reviewed, that the NNES participants would be concerned with grammatical accuracy and that, because they were at an intermediate level, the participants would be motivated to use the CF provided to help them progress and reach an advanced level of English proficiency. It is possible, however, that these presumptions did not fit the participants in this study. However, without data from a reliable instrument such as a questionnaire or

observations designed to track participants' consideration of the article CF, these possibilities are speculative. Inclusion of an instrument that could provide insight about how much the participants use CF on article errors is something to consider including in future research.

A final weakness to consider is the lack of uniformity in student submissions. Most of the participants submitted hand-written copies of their papers to their instructors, but there were several participants who turned in typed papers. This is a concern because the word processing program used to compose the essays might have given students grammatical feedback on article errors and, in turn, affected the data collected. It would have been preferable to collect hand-written essays exclusively to avoid this interference, but this confounding variable was not considered until after the data had been collected. In conclusion, the design and execution of the study could be improved in future research to minimize the influences of the weaknesses identified. Addressing these weaknesses will further clarify the usefulness of corrective feedback for improving adult English language learners' grammatical accuracy with English articles when writing.

Limitations

As with any research, this study is limited by its design and the type of data collected. These limitations not only help to define the extent of the generalizability of the study, they also clarify directions for future research.

The NNES participants in this study provide the first set of limitations to discuss. First, all participants in this study were adults studying in the southeast United States, an aspect that affects the generalizability of the conclusions drawn. Specifically, the tendencies identified through data analysis and interpretation are not likely to be applicable to students at elementary

and secondary levels or to NNESs in other locales. It is also important to note that the research involved participants at an intermediate level of English proficiency. The researcher chose to conduct the research with learners of this proficiency level because other studies (Bitchener, 2008; Bitchener & Knoch, 2008, 2009b, 2010a) provided information about how they had reacted to feedback and, therefore, informed the researcher about how participants might respond to CF in this study. The researcher did not elect to work with novice-level students because they might not have had enough knowledge of English grammar to understand the implicit CF provided to them (Pienneman, 1998; Qi & Lapin, 2001). Likewise, the researcher did not work with advanced-level students because they might have felt like they had already mastered English article usage and that addressing this accuracy issue was a lower-level concern. The conclusions drawn from the data analyses, then, are generalizable to adult NNESs at a particular English proficiency level. Participants' native language and culture, as well as their gender also effectively limit the generalizability of the results.

The demographic surveys revealed interesting data about the students in each of the participating classes, and information about the students' gender and first language is of particular interest. First, a majority of the participants were native Arabic speakers. More specifically, Arabic is a language that does not have distinct definite or indefinite articles; in Arabic, the articles are prefixes added to the noun (Jiyad, 2006), and this feature could influence the participants' ability to process and use the CF provided to them on English article errors. Furthermore, it is not likely that the Arabic students grew up in American culture or that they are familiar with the practices of American academic institutions. Consideration of cultural factors is important because they could have influenced participant behavior during the study. Finally,

the demographic surveys also revealed that the majority of the students enrolled in the intermediate-level writing classes that participated in the research were male. The data gathered in this study, therefore, is most likely to reveal information about male Arabic speakers' ability to use either SCF or WCF to improve their accuracy with English articles. This is important to note because participants' language, culture, and gender could have had an impact on their ability or willingness to use the CF provided to them and the trends observed in this study might not be generalizable to other groups of NNESs.

The type of data collected and the analyses conducted are two other limitations of the study. First, the conclusions reached for this study were based on analyses of error counts on participant papers. Other types of data, such as ratio data, were not considered for this study because it would not have reflected typical teaching practices, thereby reducing the practical significance of the study. It is likely that investigating such data would provide insight for researchers and administrators to consider, but for the purposes of this study, it was not examined because it was known that the instructors did not calculate error-to-use ratios when determining grammar grades. The limited type of data collected necessarily restricted the kind of analyses that could be completed. Error count data also did not inform the researcher about participants' experiences with the different types of feedback received or their reactions to the feedback. Future studies investigating participants' subjective responses to the different types of feedback could certainly deepen our understanding of their experiences and provide insight into their CF preferences.

Finally, the corrective feedback delivered to the participants is another source of limitations for the present study. Because the feedback on article errors was delivered only once,

speculating about the comparative effectiveness of SCF and WCF over time is difficult. Additionally, the feedback provided only addressed English definite and indefinite articles and did not, therefore, address other sources of grammatical inaccuracy. The researcher selected English articles after careful consideration of previous research. Specifically, the researcher was interested in conducting focused and practical research that could provide a solid basis upon which to build, particularly since there was very little quantitative data about the usefulness of screencasting with adult NNESs. The researcher deliberately chose to compare SCF with one type of WCF for one historically problematic grammar issue to conduct a tightly focused study that would not overwhelm the participants' attention spans (Sheen, 2007). It cannot be said, therefore, that the results obtained from this study would be the same for other grammatical features or other types of errors encountered in NNES writing. While this limits the scope of the conclusions that can be drawn from the results, it also contributes to a new area in SLA research on feedback and grammar.

Implications

The results of this study can be used by teachers and administrators to justify and improve teaching practices. Researchers can also build upon this research to design future studies that may help SLA practitioners understand the role of corrective feedback in language learning in general, and in writing in particular.

One of the most important findings from this study was the improvement evidenced for the participants' accuracy with English articles from the rough draft to the final draft of their descriptive essays after receiving one instance of corrective feedback from the researcher. This result justifies the provision of CF to adult NNESs, as there is evidence that the learners used the

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feedback given to make improvements when revising their written work. However, teachers and administrators should not expect these gains to endure, particularly if students complete new compositions of a different genre. Although Bitchener (2008) and Bitchener and Knoch (2008, 2009a, 2009b, 2010a) reported that participants in their studies were able to produce English articles with greater accuracy after receiving direct focused feedback on both revised narratives and narratives written several weeks following treatment, the participants in this study did not maintain the accuracy gains seen on their revised descriptive essays (PAD2) when composing their classification essays (PBD1). Based on this result, it can be said that improvements in grammatical accuracy made by NNES writers on one type of writing are not automatically transferred as they compose essays of a different genre. This finding has some interesting implications for teachers.

It is clear from the results of this study that teachers should not expect their students to have mastered the use of English articles after giving them one instance of corrective feedback. Instead, repeated exposure to grammar instruction and corrective feedback is needed to help students improve their use of grammatical features in English. The results of this research, therefore, reinforce the position that learning to write in a second language is a complex and on-going process that requires teachers to provide students with several opportunities to process feedback and produce texts in the target language (Emig, 1977; McLaughlin, 1987; Schmidt, 2001). Instead of using these results to support the notion that teachers should not give feedback to their students at all, it should be remembered that this study only reports the results of one instance of researcher-generated SCF and WCF feedback on English articles. Rather than unveiling an infallible method of delivering feedback, this study provides instructors with

empirical support for giving feedback and, at the same time, cautions them from thinking that grammatical errors, even those with concrete rules associated with them, may be indefinitely corrected after just one instance of feedback.

Another important implication of this study is that students should receive guidance about how to use CF they receive on assignments. Teachers and administrators should systematically infuse class sessions with time for students to review the CF received, and with instruction on how to identify and track patterns of strengths and weaknesses in their compositions. In addition to providing practical advice about how to address errors identified on one assignment, teachers should also help students improve their ability to use the CF they receive as a resource that can guide their writing for new pieces of writing. Repeated exposure to such instruction could help students become more self-sufficient learners and improve the grammatical accuracy and, therefore, the quality of student submissions.

Recommendations

The research conducted for this study contributes to the existing body of knowledge about corrective feedback and acquisition and also proposes new areas of research to explore. Because this is only one of a few studies that has quantitatively investigated screencast feedback in a second language setting, there are several areas future research could address.

First, it was shown that one instance of researcher-generated feedback was sufficient for helping both SCF and WCF participants improve their accuracy with English articles for revised compositions, but not for new compositions. It would be interesting to investigate whether one type of feedback would prove to be more effective if participants were repeatedly exposed to the treatment over time. Studies that are more longitudinal in nature could elucidate difference

between the two feedback types and provide information about how many times students might require exposure to CF to consistently demonstrate improved accuracy with articles, whether on revised or new compositions. The lack of research into the comparative effectiveness of SCF to other types of feedback means that there is a great deal of information that could be learned about this new feedback type in subsequent studies.

Future research into SCF could also help teachers, administrators, and others in the field of second language acquisition better understand if students at different proficiency levels use SCF differently and for which group of learners this feedback option is best suited. Researchers may also consider investigating the effectiveness of SCF for addressing other treatable language errors (Ferris, 2011), as well as errors that could be deemed less treatable because they are more idiosyncratic in nature. It would also be interesting to learn about how students react to receiving more comprehensive feedback on their papers using SCF as compared to other feedback types. This line of research could be of great practical use because it might be more in keeping with the scope of errors addressed by teachers.

Conclusion

Learning to write well is an important academic skill that takes time to master. NNES students learning how to write in English, as well as their instructors, must remember that grammatical accuracy, or the lack thereof, can influence how readers respond to a piece of writing. Finding efficient and effective media that draw students' attention to their grammatical errors can help teachers improve their students' accuracy and, as a result, improve the reception of the ideas they communicate in writing. If students are consistently given corrective feedback, repeatedly instructed about how to use the feedback they have received, and given opportunities

to practice what they are taught, instructors will not only ensure the time they spent giving the feedback was not wasted, but also will help develop their students into observant, self-sufficient learners who are prepared to meet the challenges of academia. Using the information gleaned from this research can help teachers and administrators develop and implement effective teaching practices that build student confidence and bolster instructors' sense of efficacy. Finally, it is clear that there is a great deal more research to do to understand the usefulness of screencasting and its role in language learning. Just as emergent writers practice and apply their knowledge to various genres, so will our understanding of feedback and how to best deliver it develop over time.

APPENDIX
IRB APPROVAL LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
             FWA00000351, IRB00001138

To: **Elizabeth A. Giltner**

Date: **September 25, 2014**

Dear Researcher:

On 9/25/2014, the IRB approved the following activity as human participant research that is exempt from
regulation:

Type of Review:	Exempt Determination
Project Title:	The Effect of Feedback Medium on on Written Accuracy with English Articles
Investigator:	Elizabeth A Giltner
IRB Number:	SBE-14-10545
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should
any changes be made. If changes are made and there are questions about whether these changes affect the
exempt status of the human research, please contact the IRB. When you have completed your research,
please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 09/25/2014 11:43:33 AM EDT

IRB Coordinator

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