Insights from Studies on Written Corrective Feedback: Implications for Language Pedagogy

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Abstract

Written corrective feedback (WCF) is an instructional strategy used to help second/foreign language (L2) learners improve their writing effectiveness. Teachers can design and provide WCF across a number of dimensions such as focus (e.g. grammar, organization, content), type (e.g. direct correction, reformulation, comment), and tone (e.g. negative, positive). This article provides a comprehensive overview of WCF, its typology, research methodologies and findings, as well as learners' and teachers' perceptions of its use and benefits. The article concludes with a discussion of implications for L2 writing pedagogy, followed by practical recommendations on the effective utilization of WCF in the classroom and suggestions for practitioners in conducting WCF research.

Keywords: *written corrective feedback, L2 writing, research review, meta-analysis*

1. Introduction

In the second and foreign language (L2) writing classroom, teachers employ various pedagogical strategies and instructions to help learners develop L2 writing skills. Written corrective feedback (WCF) is one of those instructional strategies, designed to facilitate L2 writing effectiveness (Ferris, 2010). WCF can vary in terms of its focus (e.g. form, content), types (e.g. direct, indirect, error locating, metalinguistic), and other features (e.g. tone, mode, source). Probably because of this large variety of WCF types, and because of the different methodological approaches used in WCF research, studies have shown inconclusive findings regarding its efficacy (Biber, Nekrasova, & Horn, 2011; Ferris, 2004; Kang & Han 2015; Storch, 2010).

Studies have also indicated different perceptions between learners and teachers about feedback and error correction (e.g. Brown, 2009; Peacock, 2001; Plonsky & Mills, 2006). While there is a general preference among students for their errors to be thoroughly corrected, teachers tend to view such overt and/or comprehensive correction as unnecessary or not helpful, based on theoretical arguments such as discouragement and focus on meaning (Plonsky & Mills, 2006).

The aim of this paper is to provide a comprehensive summary of WCF, its typology, and research methodologies and findings, to enable teachers to make informed decisions about its use. To that end, I reviewed articles, research syntheses, and meta-analyses published between 2007 and 2015, as well as studies investigating views from learners and teachers about WCF use. Meta-analyses, by means of averaging effect sizes across studies, enable more systematic and replicable reviews than traditional and qualitative literature reviews (Oswald & Plonsky, 2010). The article draws pedagogical lessons based on the reviewed literature and provides practical suggestions on designing and providing WCF for the needs and goals of teachers and learners. It also offers suggestions on action research practitioners can carry out in their own classrooms.

2. Literature review

2.1 Writing and corrective feedback in L2 writing

Writing is a complex task which requires specialized skills and a large number of cognitive and linguistic resources (Brown, 2000; Kellogg, 1996; Kormos, 2012; Nunan, 1999). According to a model formulated by Kellogg (1996), writing consists of three interactive and recursive processes: formulation, execution, and monitoring. In the formulation stage, learners plan the content of writing, translate ideas into linguistic forms, and organize them in a coherent manner. Execution involves creating a handwritten or typed text. In the final stage, monitoring, writers check whether the created text appropriately and adequately expresses the original message and make revisions if necessary. In addition, writing, for L2 learners in particular, requires various microskills, ranging from using acceptable grammatical systems, patterns, and rules to using the rhetorical forms and cohesive devices in written discourse (Brown, 2000).

For language teachers, among the most fundamental lines of inquiry should then be how best to facilitate the development of such skills of L2 learners. WCF, as one of the pedagogical techniques to assist such development, has received great attention and interest from both language teachers and researchers and has been commonly employed in everyday L2 classrooms. Ellis (2008) conceptualizes corrective feedback as follows:

> *In language acquisition, the term 'feedback' refers to information given to learners which they can use to revise their interlanguage. A distinction is often made between 'positive' and 'negative' feedback (sometimes referred to as 'negative feedback'); negative feedback refers to information that indicates a hypothesis is incorrect. The term 'corrective feedback' is increasingly used in preference to negative feedback. Corrective feedback can be implicit or explicit; it can be input-providing or output-promoting. (p. 958)*

While most types of WCF are used to address errors in formal aspects of the language (e.g. grammar, vocabulary), WCF can also be used to identify issues of textual organization or content.

2.2 Typology of WCF

WCF has been described across a number of dimensions. Table 1 presents an overview of the different designs of WCF. These descriptors were developed by reviewing three meta-analyses on WCF (Biber et. al., 2011; Kang & Han, 2015; Liu & Brown, 2015) and Ellis' (2009) review article. The first dimension, *source*, refers to who provides feedback. While teachers are the most common suppliers, classmates and computer software such as Criterion, an online essay evaluation system developed by Educational Testing Service (ETS), can also provide WCF.

The next dimension, *mode*, shows that WCF can be provided electronically (e.g., Microsoft Word, Google Docs) as well as orally (e.g., a supplier reads WCF out loud in a face-to-face setting; the WCF is recorded).

With respect to *types* of WCF, there is a variety, and some types are labeled differently. In direct correction, a teacher provides the correct form through various ways such as crossing out unnecessary words or phrases, inserting missing words, or writing the correct form below or near the erroneous form. Reformulation involves rewriting the entire sentence that includes erroneous forms. The idea is to create a target-like text while keeping the original text as intact as possible. Direct correction and reformulation can compose a bigger category called Direct WCF. Error locating involves marking an erroneous form by underlining or highlighting, but it does not provide information regarding why it is an error or how it might be corrected. This dimension is typically labeled as Indirect WCF. Error coding refers to the use of error codes typically consisting of abbreviated labels of the kinds of errors. Some of the commonly used error codes are 'Sp' (i.e., spelling error), 'WW' (i.e., wrong word), and 'Art' (i.e., missing article). Metalinguistic WCF involves providing explicit comments about the nature of errors that students have made. This can be done by using error codes similar to those above, or providing in-depth metalinguistic explanations of the errors. Comment refers to written comments in the margin or at the end of the text, typically regarding the progress of students' compositions.

Another dimension used to describe WCF is *focus*, which refers to the types of linguistic features that WCF targets for error correction. As seen in Table 1, they can be grammar, vocabulary, mechanics, as well as the organization and/or content of the composition. The first three features are sometimes grouped as Focus on Form, in contrast with Focus on Content.

Scope is concerned with whether a teacher attempts to collect all/most errors (i.e., Unfocused) or selects several linguistic features (i.e. Midfocused) or one specific feature (i.e. Highly focused).

The last dimension, *tone*, refers to the types of comments, and identifies whether the comments are about what students have done well (i.e. Positive) or what they have done poorly (i.e. Negative).

Table 1 An overview of the types of written corrective feedback (WCF)

Dimension		Description
Source	Teacher	Teacher provides feedback
	Peer	Another student provides feedback
	Computer programs	An online essay evaluation system provides feedback
Mode	Written	Feedback is provided in written form
	Oral	Feedback is provided orally
	Computer mediated	Feedback is provided digitally
Type	Direct correction	Errors are directly corrected
	Reformulation	The text that includes errors is reformulated to make it more target-like
	Error locating	Locations of errors are marked (e.g. underlined, highlighted, circled)
	Error coding	Editing symbols (e.g. Sp = spelling; WW = wrong word) are provided
	Metalinguistic	Explanations of errors are provided
	Comment	Teacher/peer writes prose comments in the margin or at the end of the text
Focus	Grammar	Feedback focuses on grammatical errors
	Vocabulary	Feedback focuses on the choice of words
	Mechanics	Feedback focuses on spelling, punctuation, and capitalization
	Organization	Feedback focuses on the organization of writing such as topic sentences, discourse markers, paragraphing, and conclusions
	Content	Feedback focuses on the content of writing such as its factual correctness, support for main ideas, rhetoric, and completeness
Scope	Unfocused	Feedback attempts to correct all (or most) errors.
	Midfocused	Several (i.e. 2-6) linguistic features are selected for error correction
	Highly focused	One linguistic feature is selected for error correction
Tone	Negative	Comments are on the weaknesses of the text
	Positive	Comments are on the strengths of the text

2.3 Research on WCF

Due to the variety of WCF types as discussed above, there is a considerable diversity in the design of research on WCF. This section, therefore, seeks to provide an overview of research in this area, namely how WCF has been investigated and what findings have been reported so far. In so doing, five research syntheses (Storch, 2010) and meta-analyses (Biber et al., 2011; Kang & Han, 2015; Liu & Brown, 2015; Truscott, 2007) published between 2007 and 2015 were surveyed. In line with previous studies, I have chosen to take a timeframe of approximately 10 years as a reasonable overview of relatively recent

studies. Research synthesis and meta-analysis are types of systematic reviews. The primary distinction between the two is that meta-analysis involves the aggregation of effect sizes (Plonsky, 2014).

2.3.1 Research design

Liu and Brown (2015) carried out a synthesis of patterns in WCF research methods. While their results may not be representative of all methodological approaches in the WCF research domain, they provide noteworthy insights regarding characteristics of WCF research. Based on Liu and Brown (2015), which looked at 32 published studies and 12 dissertations investigating the effects of WCF, the most common methodological design features among the included studies were to involve control or comparison groups (95%). The operationalization of control groups, however, varied across the studies. Some studies defined a control group as being provided with writing tasks with no WCF whereas some regarded a control as a group which had no writing practice. A pretest-treatment-posttest design investigating long-term effects of WCF was also a widely adopted approach (86%). Where WCF types are concerned, among the 11 types of treatments identified, direct correction (66%), error coding (41%), and error locating (23%) were the three most popular types of WCF, while 20 percent of the studies employed mixed methods (e.g. direct + metalinguistic, coding + metalinguistic).

In regard to the scope of feedback, over half of the studies (55%) employed unfocused WCF; the uses of midfocused and highly focused were of relatively minor concern.

2.3.2 Outcome measures

The majority of WCF studies seem to focus on the investigation of whether (or to what extent) WCF is effective in improving L2 written accuracy (e.g. Kang & Han, 2015; Storch, 2010; Truscott, 2007). Accuracy, defined by Skehan (1996), "concerns the extent to which the language produced conforms to target language norms" (p. 22). Despite the clarity of this definition, various accuracy measures have been adopted among L2 writing studies. There are two accuracy measures widely used in WCF research: a ratio of errors (or correct uses) to the total number of obligatory contexts, and a ratio of errors to the total number of words. However, many studies have also employed other approaches such as calculating mean scores for accuracy or sums of errors, accuracy of t-units, and holistic rating (see Biber et al., 2011; Liu & Brown, 2015).

The meta-analysis by Biber et al. (2011) is one of the few studies which did not narrow the examination of WCF efficacy to accuracy development. They investigated the effects of WCF in terms of overall writing proficiency and development of both L1 and L2 learners. Their synthesis of 306 studies revealed a range of different measures, including holistic quality rating, increase in text length, the extent of revisions made, and questionnaires eliciting students' attitudes.

2.3.3 Efficacy of WCF

Studies that investigated the effects of WCF on L2 written accuracy provide varying results, some of which are even contradictory. Truscott (2007) examined and synthesized 12 empirical studies on WCF through both qualitative and quantitative approaches. He separated the experiments into two types: controlled and uncontrolled. The former type consisted of experimental studies which made comparisons between the writing of learners who received correction and that of learners who did not. The latter type involved studies which offered information about absolute gains made by corrected groups but without a meaningful comparison (i.e. pre/post only). On the basis of his review, Truscott concluded that "the best estimate is that error correction has a small harmful effect on L2 learners' ability to write accurately" (p. 270). Storch (2010) expressed a similar view on early WCF studies. He reviewed 11 WCF studies published between the mid-1980s and 2003. Pointing out research design flaws and problematic outcome measures of these studies, he asserted that the evidence to support the efficacy of WCF is not strong.

Conversely, many other studies have suggested otherwise. Kang and Han (2015) investigated whether WCF is effective for improving L2 written accuracy by examining 22 studies through a meta-analytic approach. The results suggested that WCF has a moderate to large effect on the grammatical accuracy of L2 learners' writing (Hegde's $g = .68$) with great heterogeneity across the effect sizes of the studies ($Q = 87.180$, $p < .0001$). The meta-analysis by Biber et al. (2011) also indicated that WCF is effective for overall L2 writing development in studies with a pre-posttest design ($d = .92$) and studies with a treatment/control design ($d = .66$). Their results also showed a large effect for WCF ($d = 1.19$) when outcome measures were L2 grammar and form. When Storch (2010) summarized the main findings of 12 studies published between 2005 and 2009, the results indicated positive effects of WCF on L2 written accuracy development. At the same time, he noted that most of the evidence was based on improvements made in a limited number of linguistic features (e.g. articles, past tense).

Comparisons of different types of WCF include Storch's (2010) review of a study by Van Beuningen, De Jong, and Kuiken (2008) which found that unfocused direct feedback led to improved accuracy in new texts but indirect feedback did not, whereas focused WCF was found to be more effective than unfocused feedback in studies by Ellis, Sheen, Murakami, and Takashima (2008), and Sheen, Wright, and Moldawa (2009). In the meta-analysis by Kang and Han (2015), no significant differences were found between direct and indirect feedback, or between unfocused and focused feedback. Sheen (2007) indicated that direct WCF with metalinguistic explanations led to greater gains in accuracy than direct WCF alone, whereas the opposite was found by Bitchener (2008). Later, in studies by Bitchener and Knoch (2009a, 2009b), direct WCF with or without metalinguistic explanations did not yield any significant differences. It should be noted that the operationalization of accuracy in all of these studies was the correct use of English articles. In a meta-analysis by Biber et al. (2011), feedback focused on a combination of form and content resulted in a much greater improvement in accuracy ($d = 1.36$) than feedback that focused exclusively on

form (d = .77). Another finding was that in studies with a pre/post-test design, feedback expressed through comments and error locating both resulted in quite large gains, with a large effective size of d = 1.50 and d = .95, respectively.

Some studies provided findings affected by subject population. Kang and Han's (2015) meta-analysis showed that WCF had a small effect on L2 written accuracy when provided to beginner learners (d = .09) and that WCF was significantly more effective in second language (ESL) settings (d = .66) than in English as a Foreign Language (EFL) settings (d = .22). The meta-analysis by Biber et al. (2011), on the other hand, yielded large effect sizes for both students with a low proficiency level (d = 1.35) and those with a high proficiency level (d = 1.03).

2.3.4 Issues among WCF research

The wide variety of WCF types together with the abundance of WCF studies have created problematic issues with WCF research. One of the major problems has to do with reporting practices. Reviewers argue that many WCF studies have failed to provide thorough reports on their research contexts, which makes it difficult to examine the results and compare them across studies, let alone replicate them for further investigation of the findings. For instance, Liu and Brown (2015) discovered that many of the studies in their meta-analysis research sample did not provide a specific measure of writing development or necessary details describing error categories. Some important variables such as grading of assignments, general descriptions of learners' motivation and attitudes were also rarely reported. Focus and source of WCF and turn-around time were also neglected in some studies. Lack of the presentation of effect sizes was another serious problem observed in many studies. Similar issues were also put forth by many reviewers (e.g. Biber et al., 2011; Storch, 2010).

Some research designs have also been criticized for their lack of ecological validity. It has been argued that one-shot single treatment and exclusive focus on one linguistic feature, for instance, do not well reflect authentic classroom practice. Other methodological challenges are the great variety of accuracy measures and operationalizations of control groups, as they make those studies incompatible or at least difficult to compare with others in this domain.

2.4 Learners' and teachers' perceptions of feedback and error correction

Similar to the inconclusive findings in the research on WCF, as discussed above, studies on students' opinions, beliefs, and attitudes regarding WCF display varying results. Seker and Dincer (2014), for instance, sought to gain insights into learners' perceptions on teachers' feedback by means of administering questionnaires and semi-structured interviews to 457 students at a preparatory EFL program in Turkey. The participants expressed strong preferences for receiving feedback focused on grammatical accuracy. Specifically, their analysis revealed that the students preferred to have all the mistakes in their writing corrected. This strong student preference for form-focused feedback on all their errors was also found in other studies (e.g. Lee, 2008; Leki, 1991). At the same time,

those same participants in Seker and Dincer's study also opined that they would like to receive feedback for both the content and form of their writing.

The same preference was also reported by Lee (2008) in an investigation of students' reactions to teachers' feedback in secondary EFL classrooms in Hong Kong, employing various data collection strategies such as questionnaires, classroom observations, and interviews. The results revealed that the students hoped to receive more written comments from their teachers. Another notable finding was that students with low proficiency showed a less positive attitude toward error correction than students with high proficiency. More specifically, nearly half of the students in the former group indicated that they wanted their teacher to respond to *none* of their errors, while more than two-thirds of the students in the latter group hoped for their teacher to respond to *all* of their errors.

Somewhat contradictory findings were reported in a study by Aliakbari and Raeesi (2014) although the population of their participants was quite unique. The study surveyed Master of Teaching English as a Foreign Language (MA TEFL) students in Iran regarding priorities among different aspects of academic writing (e.g. grammar, organization, coherence) in error correction and feedback to receive from their teacher. Over half of the participants expressed comments on the organization of the paper as the highest priority, and 40 percent chose grammar and syntax as the least important aspect.

The mismatch in perceptions of error correction between learners and teachers has also been discussed in many studies (e.g. Brown, 2009; Peacock, 2001; Plonsky & Mills, 2006). Surveying 83 first- and second-year students across nine languages and 49 foreign language teachers, Brown (2009) compared learners' and teachers' perceptions of effective foreign language teaching. He found significant discrepancies between the two groups. Whereas students, particularly novice learners, preferred a grammar-based approach and explicit error correction, teachers were more hesitant about such a style of error correction and grammar instruction.

Similar findings were found in Hyland's (2011) case study on individual differences and form-focused feedback. Two teachers responded in an interview that they believed form-focused feedback would not produce any positive learning outcomes, and it could even be harmful to the students' self-esteem. In contrast to these views, most of the students in the study expressed the importance of such feedback. They felt that their errors needed to be pointed out, and that it would help them to consolidate their L2 learning. Plonsky and Mills (2006), in their review of previous research, stated that contrary to uniform preference for error correction among students, "Many teachers chose not to correct students' errors because they believe that exhaustive error correction is simply ineffective" (p. 58).

The review of research on WCF and perceptions among learners and teachers has illustrated that WCF can be implemented across a number of dimensions such as focus and types, and that its efficacy has been discussed inconclusively. Issues with WCF research methodologies have also been revealed by meta-analyses (e.g. Liu & Brown, 2015). It was found that learners and teachers tend to hold different views about feedback and error correction (e.g. Brown, 2009; Plonsky & Mills, 2006).

3. Discussion

Based on the above literature review, this section considers implications for L2 writing pedagogy, provides guidance on how to best utilize WCF in language classrooms, and offers advice for those who plan to conduct research on WCF.

3.1 Implications for language teachers

The research findings discussed above offer several implications for language teachers. First, it is clear that WCF should not merely be considered as the correction of learner errors. As seen in Table 1, there are various means to provide WCF, which include provision of comments on content and utilization of peers as a feedback source. When employing WCF in L2 writing classes, it is of value to consider the different dimensions that constitute WCF and explore their effects in facilitating learners' L2 writing development, and ultimately, their overall L2 learning.

Second, it should be acknowledged that efficacy of WCF can vary depending on the types of learners, learning contexts, and most importantly, the design and use of WCF (see e.g. Biber et al., 2011; Kang & Han, 2015; Storch, 2010). As a result, judgments on the effects of WCF based on existing research findings are to be avoided, and it is recommended that teachers develop their own best practice in the use of WCF.

Lastly, it is important to keep in mind that learners may have preferences for certain types of error corrections which do not match with the types of WCF that the teacher employs in the classroom. This is not to say that teachers should be guided only by learners' preferences, but instead that teachers are encouraged to communicate with students and explicitly state the rationale behind their WCF and its expected outcomes. Such clear understanding among students will enable both teachers and learners to discuss and evaluate writing instructions in an effective manner.

3.2 Effective WCF utilization in the language classroom

In order to effectively utilize WCF in the classroom, it is vital that the design of WCF reflects learning and teaching objectives. These objectives can be for students, teachers, course administrators, and other stakeholders. Formulating clear objectives will help determine the focus, scope, and type of the feedback listed in Table 1. For instance, if a course objective is to help learners develop the knowledge and accurate use of certain grammatical features, feedback can be focused on correcting errors only in these elements (i.e. focus is grammar, scope is midfocused, and type is negative). Teachers may combine direct correction and metalinguistic explanation in order to facilitate the further development of the knowledge about the target linguistic features, as studies such as Sheen's (2007) have indicated that direct WCF with metalinguistic explanations resulted in greater gains in accuracy than direct WCF alone, and focused WCF was found to be more effective than unfocused WCF in the studies by Ellis et al. (2008), and Sheen et al. (2009).

Estimating the time that can be spent on instruction is also a key factor in successful implementation of WCF. For instance, addressing all errors in grammar, vocabulary, and mechanics may not be feasible in a writing course with 30 students. For those who are relatively new to WCF, it is advisable to start with highly focused error correction (e.g. verb tenses, singular-plural noun forms) with simple correction forms (e.g. error locating, error coding) (for studies on highly focused WCF, see e.g. Bitchener, 2008; Bitchener & Knoch 2009a, 2009b; Sheen, 2007; Storch, 2010).

As is clear from the literature survey, tone is another important aspect to take into consideration, as most types of WCF tend to address the weaknesses of writing. Suppose, for instance, a student spends hours and hours writing an essay about her favorite book. When her teacher gives her the essay back, all she sees is the discussion of what is wrong about her writing. While she understands that these corrections are aimed at improving her writing, the mere error corrections could provoke a negative emotional reaction, such as disappointment and embarrassment, which may also lead to lower learning motivation. One way to address such issues is to balance the tone by providing comments on the strengths of the writing. In fact, studies have found that learners express preference for receiving comments on content (e.g. Lee, 2008; Seker & Dincer, 2014). Although learners have individual differences and preferences, it is important for teachers to be mindful of all students' likely responses to the feedback.

It should also be noted that certain WCF types could cause students to experience a sense of unfairness. With WCF targeting grammatical errors along with provision of metalinguistic explanations, one student has made many errors in her writing, and therefore received her assignment back full of detailed explanations from the teacher. Meanwhile, another student, who has made very few mistakes, has received almost no remarks in her essay. Although little WCF indicates good writing performance in this case, it is possible for the latter student to feel that she has received less instruction (or possibly even little attention or care) from the teacher compared to the former student. Students' preferences for receiving comments were also found in the studies by Lee (2008) and Aliakbari and Raeesi (2014).

Lastly, from the literature survey it is clear that WCF can be evaluated through various measures, such as linguistic accuracy development (e.g. Kang & Han, 2015; Storch, 2010; Truscott, 2007), overall writing quality (Biber et al., 2011), and students' feedback (Aliakbari & Raeesi, 2014; Biber et al., 2011; Lee, 2008). It is vital to assess whether or to what extent the types of WCF used in the classroom were effective in accomplishing the goals established at the beginning of the program. At the same time, reflecting on the amount of work required and considering if it is feasible to continue for the following semester is necessary. It is also important to examine how students perceive the WCF that they receive. As suggested by previous studies (e.g. Brown, 2009; Peacock, 2001; Plonsky & Mills, 2006), there could be a mismatch in views about WCF between students and teachers. A simple Likert scale questionnaire eliciting learners' perceptions about the WCF used with their writing could offer new insights and useful ideas for the next writing instruction.

3.3 Suggestions for further research on WCE

Several suggestions for further studies on WCF can be drawn from the research review. First, the examination of WCF application highlights the complexity of the different designs of WCF and the different features of the studies carried out in this area. Because of the large range of variables that can be investigated (e.g. feedback types, kinds of writing tasks, sample populations), it is not surprising that we find a wide variety of research designs. As a result, there are no entirely clear-cut results, and sometimes results may even appear contradictory. What is crucial for teachers and practitioners who are to conduct WCF research, then, is to provide descriptions of their studies and results as thoroughly and as in depth as possible (see Liu & Brown, 2015). Findings also need to be carefully discussed in comparing results with those in previous studies. It may, for instance, lead to an inadequate conclusion if WCF efficacy is discussed based on different studies–one of which exclusively focused on English articles, and the other its effects on multiple linguistic features–but has failed to address those points.

The review of WCF studies also indicates that researchers have largely focused on the improvement of grammatical accuracy. This line of research is certainly merited. However, many additional independent and dependent variables are worthy of empirical attention when investigating the effects of WCF. Those variables include learners' individual differences (IDs). Cognitive components such as language aptitude and working memory, affective components such as language anxiety and willingness to communicate, and motivational elements are often discussed in terms of their moderating effects on L2 instruction. Ellis (2012) observed that in the processes of instructed L2 learning, IDs often moderate the effect that instruction has on the cognitive and social processes and via these on L2 learning. While valuable findings have been produced by several empirical studies of WCF in relation to IDs (e.g. Goldstein, 2006; Hyland, 2011; Rahimi, 2014), there still is a scarcity of this type of research in the domain.

Another suggestion that can be drawn from the current research review is the need for teachers to carry out action research on the application of WCF and to consider pedagogical implementations in class. The key concept of action research is to "intervene in a deliberate way in the problematic situations in order to bring about changes and, even better, improvements in practice" (Burns, 2010, p. 2). It is context-specific and practical since problems are identified by teachers in their own teaching context, and the goal is to improve teaching (Ellis, 2012). In such research, WCF can be designed to address the issues identified in the classroom, implemented, monitored, and evaluated (for a procedure to conduct action research, see e.g. Burns, 2010; Ellis, 2012). Action research is a valuable way to increase the validity of the types of WCF used in the study and to ensure that findings are useful in the particular context in which the teacher works.

4. Conclusion

By reviewing existing research, this article has illustrated that WCF can be designed and implemented according to various dimensions. For example, Biber et al. (2011), Ellis (2009),

and Liu and Brown (2015) discuss the roles of source (teacher, peer, computer programs), mode (written, oral, computer mediated), type (direct correction, reformulation, error locating, error coding, metalinguistic, comment), focus (grammar, vocabulary, mechanics, organization, content), scope (unfocused, midfocused, highly focused), and tone (negative, positive), all of which can be manipulated by teachers.

The review of meta-analyses and research syntheses (e.g. Kang & Han, 2015; Storch, 2010; Truscott, 2007) showed that WCF tends to be targeted at improving the accurate use of certain linguistic elements and that claims about its efficacy are still somewhat controversial. Another important issue related to WCF is the mismatch in perceptions between learners and teachers regarding the types of feedback and error correction that they prefer and/or believe to be more effective (e.g. Brown, 2009; Peacock, 2001; Plonsky & Mills, 2006).

Reflecting on these findings, I suggest wider, context-specific utilization of WCF to be implemented in the language classroom as well as further research into WCF to be conducted by language teachers and practitioners. For example, formulating clear learning objectives can help teachers to choose which dimension to employ in their own application of WCF. In so doing, it is advisable to consider the workload expected of teachers as well as the affective impacts that the WCF may have on learners. Because much of WCF tends to focus on the weakness of writing, including additional comments on the strengths of what students have written can generate positive affective responses and help students feel more motivated, build their confidence, and feel more positive toward their teacher.

With respect to research into WCF, thorough reports on the research methodology and findings are crucial in order for replicability and comparison across studies in the domain. One suggestion for further studies is to investigate the effects of WCF in relation to individual differences, such as language aptitude, anxiety, willingness to communicate, and motivation. Another is for language teachers to conduct action research that specifically addresses the problems identified in their own teaching/working contexts, so that the results of the study will not only help to improve the particular issues but also be useful to others in similar contexts.

WCF has significant potential for teachers to provide instruction designed to effectively achieve learning objectives while taking into consideration learners' needs and preferences. This potential can be enhanced when teachers and practitioners carry out further research to identify what works best in their specific context.

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