The effectiveness of comprehensive corrective feedback in second language writing
van Beuningen, C.G.

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Chapter 2

Corrective feedback in L2 writing: theoretical perspectives and empirical insights

2.1 Introduction

When reviewing their students’ texts, teachers give feedback on a wide range of issues. They might address the text’s content, the way in which its ideas are presented and organized, the appropriateness of the vocabulary that is used, and so on. The type of feedback that has received most of researchers’ attention, however, is feedback on linguistic errors. Such responses to second language (L2) learners’ non-target-like production have been commonly referred to as instances of corrective feedback (CF) or error correction.

The numerous studies investigating the usefulness of CF (see section 2.5) could be situated at the intersections of two academic disciplines, both with their own theoretical and methodological orientations (e.g. Ellis, 2010; Ferris, 2010; Manchón, 2010; Santos, López-Serrano, & Manchón, 2010; Sheen, 2010a): the field of L2 writing and the domain of second language acquisition (SLA).

Researchers in the field of L2 writing have been mainly interested in the question if and how CF can help students to become more able and self-employed writers (e.g. Chandler, 2003; Ferris, 2006). The predominant focus of studies within this strand of research has been on exploring the role of feedback in the process of developing learners’ editing and revision skills. This perspective has been referred to as the learning-to-write dimension of L2 writing (see e.g. Leki, Cumming, & Silva, 2008 for a review).

Currently, however, the research focus seems to be shifting towards the potential of written CF in aiding learners’ interlanguage development. Arising from a writing-to-learn

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agenda (e.g. Harklau, 2002; Manchón, 2009; 2010; Ortega, 2009; Santos, et al., 2010), and based within a psycholinguistic and cognitive SLA framework, recent studies have been investigating if receiving and processing written CF can lead to L2 learning (e.g. Bitchener & Knoch, 2010a; Ellis, Sheen, Murakami, & Takashima, 2008; Sheen, 2007). Inspired by oral CF studies, these investigations were tightly controlled in their methodological set-up, and measured the effects of CF by comparing learners’ accuracy performance on pre-tests and (delayed) post-tests. The focus of the present chapter is on this SLA oriented area of CF research.

Even though a number of theoretical SLA insights would predict that written CF can foster L2 development, and despite the fact that the efficacy of oral CF is well documented (see, for example, meta-analyses by Li, 2010, Lyster & Saito, 2010, and Mackey & Goo, 2007), the usefulness of written error correction has been and remains a topic of considerable debate (see particularly Ferris, 1999; 2004; Truscott, 1996; 1999; 2007; Truscott & Hsu, 2008). This chapter intends to review the theoretical arguments underpinning the use of CF in L2 instruction, the objections raised against CF, and the empirical evidence concerning the value of written CF to the SLA process. In the final part, I will describe some of the issues that still need to be investigated, and draw up the rationale behind the empirical work presented in this dissertation.

### 2.2 Theoretical foundations of the use of CF in L2 instruction

The rationale for expecting that error correction can be beneficial to language learning, rests on various theoretical grounds. Without claiming to provide a comprehensive overview of related theoretical notions and insights, this section will summarize some of the theoretical foundations of the use of CF in L2 classrooms.

#### 2.2.1 L1 and L2 acquisition: different processes, different approaches

Since the early 1970’s a communicative approach to language teaching has been dominating the field of L2 instruction. The communicative paradigm was initiated as a movement away from traditional, structural methods of L2 pedagogy, which focused on teaching isolated linguistic features and grammar rules. Inspired by theories of communicative competence (e.g. Canale & Swain, 1980; Hymes, 1971), communicative approaches aim at developing learners’ ability to use the L2 in realistic, meaningful communication. Key ingredients of this approach are providing learners with abundant
comprehensible input (e.g. Krashen, 1981; 1982; 1985) and creating opportunities to engage in meaningful language use. In doing so, communicative approaches construct an environment that promotes naturalistic acquisitional processes, such as implicit and incidental learning (e.g. Krashen & Terrell, 1983; Long, 1985; Skehan, 1998).

Based on the nativist idea that L1 and L2 acquisition are much alike, some researchers have been advocating a fully naturalistic approach to L2 teaching (e.g. Krashen & Terrell, 1983). Having access to ample comprehensible input was thought to be the necessary and sufficient condition for SLA. Learners were expected to comprehend the available input by inferring its meaning on the basis of linguistic information that is embedded in the communicative context. L2 grammatical competence was believed to emerge automatically, without any need for negative evidence (e.g. Krashen, 1981; 1982; 1985; Schwartz, 1993).

However, it seems fair to state that nowadays the consensus within the field of SLA is that L1 and L2 acquisition are not instances of the same phenomenon; the cognitive processes involved in L1 and L2 acquisition do not fully overlap (Doughty, 2003). Research investigating L2 acquisition in naturalistic settings provided support for this hypothesized difference. Studies in the context of French immersion classrooms in Canada, for instance, found that learners failed to acquire a native-like grammatical competence despite the continuous exposure and practice opportunity the immersion context provided for. Whereas learners were typically shown to develop native-like perceptive skills and fluency, they failed to reach a target-like level of accuracy in production (e.g. Swain, 1991 or see e.g. Lyster, 2007 for a review). Findings as these suggest that, however necessary for SLA, abundant comprehensible input is not a sufficient condition for developing a near-native level of accuracy. Révész (2007) clarified that comprehension and acquisition are not just two sides of the same coin, and that “comprehension may occur in the absence of acquiring linguistic knowledge” (p. 5). It is quite possible for learners to grasp the meaning of a message by relying on contextual information and/or already acquired linguistic awareness. In doing so, they may totally circumvent processing the message’s morphosyntactic encoding.

Ample opportunity for language production does not guarantee learners to be pushed beyond strategic and semantic processing either (Révész, 2007). Even when producing output, L2 learners do not necessarily engage in (full) morphosyntactic processing. They are able to construct a message which is communicatively adequate even when formal accuracy is lacking, or, as Skehan & Foster (2001) put it, “language can work despite poor execution. Its meaning is recoverable even if its form is incorrect” (p. 183). Additionally, in total absence of consideration for L2 accuracy, learners might proceduralize such non-
target-like linguistic solutions to communicative problems, and premature fossilization of errors could be the result (e.g. Skehan & Foster, 2001).

If one starts from the idea that a native-like proficiency on all possible levels, including accuracy, is the ultimate goal of L2 instruction, the conclusion should be that a fully meaning-based approach to L2 instruction does not suffice. Instead, some attention to linguistic form is necessary for learners to be able to progress towards well-formedness in their L2 (e.g. Ellis, 2005; Long, 2000; Long & Robinson, 1998; Norris & Ortega, 2000; Skehan & Foster, 2001). Current communicative methodologies (e.g. task-based approaches, content-based approaches, language sensitive approaches to content teaching) indeed all incorporate some form of grammar instruction.

2.2.2 CF as a focus-on-form intervention

As elucidated in the previous section, it is now widely accepted that effective L2 pedagogy should involve – at least at times – attention to linguistic form. Without it, learners’ accuracy development could be expected to be slower, more difficult, and less successful (Doughty, 2003). A pedagogical intervention that has received considerable attention and which has been advocated in the SLA field (see for example Norris & Ortega, 2000 for a review) is Long’s focus-on-form approach (Long 1991; 1996; 2000; Long & Robinson, 1998). According to Long (2000) focus-on-form

involves briefly drawing students’ attention to linguistic elements […] in context as they arise incidentally in lessons whose overriding focus is on meaning or communication. The temporary shifts in focal attention are triggered by students’ problems with comprehension or production (p. 185).

One of the most crucial characteristics of a focus-on-form intervention is that it is provided within a communicative context. The importance behind this, is explained well by Lyster (2007) in terms of Segalowitz’s (1997; 2000) notion of transfer-appropriate learning. Lyster (2007) rephrased the essence of this concept by stating that “… the kind of cognitive processing that occurs while performing [language] learning tasks should ideally resemble the kind of processing involved during communicative language use” (p. 43). The drawback of decontextualized grammar teaching is that learners will have difficulty transferring the knowledge they have gained from isolated grammar lessons to actual language use in a communicative situation. The focus-on-form approach, on the other hand, caters for learning that is transfer-appropriate.
Whereas Long’s definition implies that focus-on-form episodes are unplanned (i.e. incidental), other researchers (e.g. Doughty & Williams, 1998; Ellis, Basturkmen, & Loewen, 2002) have adopted a broader perspective on what can constitute a focus-on-form episode; in their view focus-on-form can be both planned and unplanned, and reactive as well as preemptive.

One of the pedagogical tools identified as a potent focus-on-form instrument is error correction (e.g. Ellis, 2005). CF is a reactive focus-on-form methodology with the specific value of inducing learners’ attention to form in the context of performing a task, in a personalized, individualized manner. It could be argued that CF on written output is especially promising as a focus-on-form intervention. Whereas oral feedback will inevitably interrupt the communicative flow, learners only have to deal with written feedback after meaning has been communicated (Polio, Fleck, & Leder, 1998).

2.2.3 CF as noticing facilitator

A second fundamental motivation of the focus-on-form methodology – apart from Segalowitz’s (1997; 2000) notion of transfer-appropriate learning – can be found in Schmidt’s Noticing Hypothesis (Schmidt, 1990; 2001). The concept of noticing combines the two crucial cognitive linguistic notions of attention and awareness (Svalberg, 2007). The Noticing Hypothesis states that subliminal SLA is impossible, and that it is only through conscious attention that input can be converted into intake\(^2\). Schmidt thus argued that noticing is a necessary condition for language learning.

Another essential role associated with attention, is its ability to make learners aware of “a mismatch or gap between what they can produce and what they need to produce, as well as between what they produce and what target language speakers produce” (Schmidt, 2001, p. 6). This concept has been commonly referred to as noticing the gap (e.g. Schmidt and Frota, 1986). Ellis (1995) used the term cognitive comparison rather than noticing the gap because, in his view, learners also need to notice when their output is the same as the input.

When conscious attention to linguistic form is considered facilitative to or even a prerequisite for interlanguage development, focus-on-form interventions such as CF can be

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\(^2\) Although in psycholinguistic and cognitive SLA accounts the general consensus is that attention is a necessary condition for language learning (e.g. Robinson, 2003; Schmidt, 1990; 1994; 2001; Sharwood Smith, 1993; VanPatten & Cadierno, 1993), there is disagreement on the level of awareness that should be involved (e.g. Robinson, 2003; Schmidt, 2001; Tomlin & Villa, 1994). See, for example, Schmidt, 2001 for an elaborate account of attention related issues in SLA.
expected to support the SLA process (e.g. DeKeyser, 1994; Han, 2002). As Hulstijn and Schmidt (1994) stated, they can be considered cognitive focusing devices for learner attention. In raising learners’ awareness of certain linguistic features, CF enables learners to notice the gaps between their own interlanguage output and the target language input (i.e. the feedback provided). Subsequently, these noticing operations could prompt destabilization and restructuring of learners’ developing interlanguage grammar (e.g. Gass, 1997; Long, 1996).

Adams (2003) furthermore pointed at the advantage of written CF over orally provided feedback. Although both modalities provide learners with the opportunity of noticing mismatches between the target language and their interlanguage system, learners might not (always) be able to make the cognitive comparison in online oral language use. The classic psychological conception of attentional resources is that they are limited (Schmidt, 2001); when presented with an overwhelming number of stimuli at any given moment, the human brain might be unable to attend to them all due to a lack of available processing capacity (Al-Hejin, 2004). Being very demanding on learners’ attentional resources, online language production and orally provided CF might produce such a cognitive overload. In writing, on the other hand, learners have enough time – and therefore cognitive resources – to compare their output with the CF they received, which increases the likelihood of learners noticing gaps in their interlanguage (e.g. Polio et al., 1998; Sheen, 2010a).

2.2.4 Pushed output and CF
Krashen (1989) stated that output is nothing more than a product of already acquired L2 competence. Today however, drawing on Swain’s (1985; 1995) Output Hypothesis, most SLA researchers acknowledge that learner output is a valuable source for acquisition (e.g. Ellis, 2003; 2005; Manchón, 2010; Skehan, 1998). Swain argued that the importance of L2 output lies in the fact that output production pushes learners to process language more deeply (i.e. beyond semantic processing) and with more mental effort than is necessary during listening and reading.

Swain (1985; 1995) specified three specific functions of learner output\(^3\). Firstly, producing output allows learners to test hypotheses about the target language grammar. Secondly, it may trigger the type of meta-linguistic reflection that is beneficial to interlanguage development.

\[^3\] It needs to be noted that not all types of output are expected to serve these functions (e.g. Ellis, 2005). The complexity and length of output resulting from controlled practice exercises, for example, is too limited to be beneficial to interlanguage development.
development. Finally, output has the ability to promote noticing and to push learners’ awareness of the gaps and problems in their interlanguage system.

Swain (1991) added that output by itself does not necessarily serve these functions, and recognized the importance of CF by stating that “if students are given insufficient feedback or no feedback regarding the extent to which their messages have successfully (accurately, appropriately, and coherently) been conveyed, output may not serve these roles” (p. 98). Likewise, other researchers (e.g. Han, 2002) have claimed that learners’ output should be accompanied by CF in order to be beneficial to the language learning process:

While the focus is on meaning, there is a limit to how much an L2 learner can introspect the sufficiency of his own linguistic resources. Also, even if the learner consciously recognizes at that point what he lacks, there is no guarantee, for various reasons, that he will subsequently be able to tune himself in for a solution in the future input, or even if he is, he may not be able to tell whether what he sees as the potential solution is actually the correct solution. Rather, external feedback [...], I shall argue, may significantly facilitate the fulfillment of the ‘noticing’ function (p. 18).

Again, it might be argued that the beneficial effects associated with written output and CF, will outweigh those of oral language use and correction. The fact that, in writing, learners are not under such strict time constraints as in online oral language production, makes it more feasible that the beneficial roles of output production in combination with CF are actually realized.

2.3 Objections against the use of CF in L2 instruction

While the previous section discussed why CF can be presumed to facilitate SLA, some researchers have stated error correction to be entirely unnecessary and ineffective, or even harmful (e.g. Krashen, 1985; Schwartz, 1993; Truscott, 1996). This claim relies on both practical and theoretical arguments. The practical doubts pertain to teachers’ capacities in providing adequate and consistent feedback, and learners’ ability and willingness to use the feedback effectively (Truscott, 1996). The theoretical case against error correction rests on the claim that CF overlooks important insights from SLA theory. The two main theoretical
issues that informed the objections raised by CF opponents will be discussed here, namely the role of explicit L2 knowledge in the language learning process and Pienemann’s (1989; 1998) Learnability Hypothesis. This section furthermore reviews the hypothesized detrimental side-effects of CF.

2.3.1 Implicit and explicit L2 knowledge

An often addressed issue in the field of instructed SLA is the role of conscious grammar knowledge in becoming a proficient user of the L2. Conscious knowledge about the L2 grammatical system has been widely referred to as explicit or declarative knowledge, and opposed to implicit or procedural knowledge (e.g. Bialystok, 1994; DeKeyser, 1998; Krashen, 1981; see DeKeyser, 2003 for an extensive review). Explicit knowledge denotes a conscious awareness of grammatical rules and the appropriate meta-language for labeling and verbalizing this knowledge (Ellis, 2004). Implicit knowledge, on the other hand, is claimed to be unconscious, non-verbalizable, and rapidly and easily accessible during online language use.

Currently, the assumption is that it is their implicit L2 knowledge that enables learners to communicate spontaneously and fluently⁴. How the type of explicit knowledge resulting from grammar instruction contributes to the SLA process, however, “has been and remains today one of the most controversial issues in language pedagogy” (Ellis, 2005, p. 214). Disagreements concern both the value of explicit knowledge in itself and the connection between explicit and implicit knowledge. This debate is important when exploring the effectiveness of error correction, because CF contestants (e.g. Krashen, 1982; Truscott, 1996) have stated that, if CF yields any L2 knowledge at all, this emerging knowledge could only be explicit in nature.

Opponents to the use of CF in L2 classrooms, such as Krashen (1982), claimed that the benefits of explicit knowledge as such to actual L2 performance are rather limited. In Krashen’s view, learners can only use their explicit L2 knowledge during monitoring (i.e. editing of output after it has been initiated by the acquired system), and not in online language use. In exploring the effect of online planning time on learners’ oral language performance, Yuan and Ellis (2003) found, however, that the available planning time improved the accuracy of learners’ online production. This finding suggests that – if

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⁴ This assumption holds for oral L2 use in particular. As Bitchener & Knoch (2010a) stated, “the extent to which learners draw upon explicit and implicit knowledge during the writing process is not known. It is likely, however, that they draw upon both explicit and implicit linguistic knowledge” (p. 4). This point will be further addressed in Chapter 6, section 6.3.1.
provided with enough time – learners are able to access their explicit knowledge online, and therefore the value of conscious L2 knowledge is not restricted to monitor use (Ellis, 2005).

Irrespective of the value of explicit knowledge as such, it may be the case that explicit knowledge aids the development of implicit knowledge. However, those opposing the effectiveness of CF adhere to the position that explicit and implicit knowledge systems are entirely distinct, without an interface connecting them. This view is strongly related to Krashen’s (1981; 1982; 1985) proposed distinction between learning and acquisition. According to Krashen, acquisition of implicit knowledge unfolds unconsciously, whereas learning always involves conscious effort, and can only result in explicit knowledge gains. Since, in his view, internalizing linguistic knowledge takes place in two fundamentally different ways, resulting in two separate knowledge bases, Krashen stated that explicit knowledge could never be converted into implicit knowledge.

From such a non-interface viewpoint (e.g. Krashen, 1985; Schwartz, 1993), the line of reasoning behind the claim that CF does not play a facilitative role in the SLA process is thus as follows: while CF can only result in explicit knowledge, actual language use is totally driven by implicit knowledge. The idea that explicit knowledge will never become implicit, then renders the conclusion that learners’ interlanguage system is unsusceptible to CF, or, in Truscott’s (1996) words, that CF will only lead to “a superficial and possibly transient form of knowledge” (p. 345) or ‘pseudolearning’.

Alternative perspectives, however, are possible⁵. Many SLA researchers seem to converge on the position that there is an interface connecting implicit and explicit knowledge bases (e.g. DeKeyser, 1998; Hulstijn, 1995; Hulstijn & Schmidt, 1994; McLaughlin, 1990; Schmidt, 1990; Schmidt & Frota, 1986; Swain, 1985). Drawing on Skill Acquisition Theory (e.g. Anderson, 1982), they propose that the gap between explicit knowledge and language use can be gradually bridged by output practice (DeKeyser, 2003). By practicing language production, L2 learners are enabled to consolidate and automatize their linguistic repertoire (Manchón, 2010). CF is believed to further assist this proceduralization of declarative L2 knowledge (Ellis, 2010).

Other scholars adhere to an intermediate position (e.g. Doughty & Williams, 1998; Ellis, 1997; Long & Robinson, 1998). They see implicit and explicit knowledge as being separated, but argue that explicit knowledge may feed into the intake process by helping learners notice the formal features of the input. From this perspective, CF could be

⁵ See e.g. DeKeyser (2003) for a comprehensive account of opposing views on the relation between implicit and explicit L2 knowledge.
expected to foster interlanguage development because it facilitates the process of noticing (the gap).

2.3.2 Developmental readiness

Another theoretical objection raised by Truscott (1996) in his case against grammar correction, relates to research into naturalistic SLA and the Natural Order Hypothesis (Krashen, 1981; 1982, 1985). Early studies investigating the acquisition in a naturalistic L2 environment, found that different grammatical features were acquired in a relatively strict, predefined order (e.g. Bailey, Madden, & Krashen, 1974; Dulay & Burt, 1974; Pica, 1983). Such findings suggest that learners will only be able to master linguistic forms in consonance with their own internal learning mechanisms, and not in the sequence imposed by a teacher or L2 syllabus (Corder, 1967).

A similar point was made in Pienemann’s (1989) Teachability or Learnability hypothesis, which suggests that learners will only be able to acquire features for which they show developmental readiness. In Pienemann’s view, features that are beyond a learners’ stage of development will not be teachable because “the acquisition process cannot be steered or modeled just according to the requirements of formal instruction” (1989, p. 57). Truscott (1996) deduced that, for CF to have any effect, teachers should align the CF they provide to a learner’s current level of L2 development. If not, learners will be presented with grammatical structures that they are not yet ready to acquire, and as a result, no intake will take place. It has been pointed out, however, that the current insights and research base concerning developmental sequences is too limited to be useful for teaching practice (e.g. DeKeyser, 1998; Ellis, 1997; Truscott, 1996). This led Truscott (1996) to conclude that provision of aligned CF is not (yet) a feasible objective, and that error correction therefore cannot be expected to be beneficial to SLA.

2.3.3 Potential harmful side-effects of CF

CF opponents have not only stated that error correction is unable to lead to accuracy development, but some even argued that CF can be detrimental to the process of L2 acquisition.

A first reason for claiming that CF should be considered counterproductive, is that, in Truscott’s (1996; 2004) view, the time and energy spent on dealing with corrections (both by teachers and students) could be allocated more efficiently to alternative activities, such as additional writing practice.
Secondly, both Krashen (e.g. 1982) and Truscott (e.g. 1996) suggested that, in making students aware of their errors, CF leads to learner stress and anxiety of committing the same errors in future writing. In their view, this anxiety could make learners avoid the erroneous constructions when writing a new text, resulting in simplified writing. This suggestion that the focus on language form induced by CF might lead to a reduction of the linguistic complexity of learners’ output, is in line with predictions from single-resource, limited capacity models of attention which also expect a trade-off between accuracy and complexity (e.g. Skehan, 1998). Within these models, L2 performance is expected to become more complex when learners are willing and feeling free to experiment with the target language. A focus on accuracy, on the other hand, “is seen to reflect a greater degree of conservatism” in which learners will try “to achieve greater control over more stable [interlanguage] elements” while avoiding extending their L2 repertoire (Skehan & Foster, 2001, p. 191). From a multiple-resource perspective on attention (e.g. Robinson, 2003; 2005), however, linguistic accuracy and complexity are not presumed to be in competition because these two form-related aspects of learner output are thought to be closely related to each other.

2.4 Controversies concerning the use of CF in L2 instruction

The previous sections discussed arguments both in favor and against the use of CF in L2 instruction. Even amongst CF advocates, however, some issues relating to the value of error correction remain divisive. In what follows, I will review two of the most heavily debated issues, which are (1) the differential effectiveness of various CF methodologies, and (2) the amenability of different types of errors to CF.

2.4.1 Which CF method to use

As made explicit in Table 1.1 (p. 4), CF on L2 learners’ writing can take many different forms. It was explained how methodologies of written error correction may vary, for example, with respect to their explicitness, their focus, the person providing the feedback, the feedback medium, and so on. The two dichotomies which have been receiving the lion’s share of researchers’ attention are that between focused and unfocused CF, and the contrast between direct and indirect CF. The following is a synopsis of the different positions that have been advanced in the literature concerning the relative effectiveness of these different CF types.
Focused and unfocused CF

As was already explained, the focused-unfocused dichotomy refers to the comprehensiveness of correction methodologies. The unfocused or comprehensive approach involves correction of all errors in a learner’s text, irrespective of their error category. Focused or selective CF, on the other hand, targets a (number of) specific linguistic feature(s) only (e.g. errors in the use of English articles). Errors outside the focus domain are left uncorrected.

Different predictions have been made with respect to the relative effectiveness of focused and unfocused CF. Ellis et al. (2008), for example, claimed that there are theoretical reasons for expecting the focused approach to be more beneficial to accuracy development than unfocused CF. They stated that learners are more likely to notice and understand corrections when they target a specific (set of) error type(s). The idea that noticing and understanding are essential for acquisition (e.g. Schmidt, 1994; Ellis, 2005), led Ellis et al. (2008) to conclude that focused CF has greater potential to impact accuracy development. Sheen (2007) and Bitchener (2008) furthermore argued that unfocused CF may not be the most effective correction method because L2 learners have a limited processing capacity. They claimed that asking learners to deal with CF which targets a broad range of linguistic features at the same time might produce a cognitive overload, and prohibit feedback processing. As noted earlier, however, this attentional capacity problem might be more prominent in the online processing of oral feedback than in the offline handling of written CF (e.g. Sheen, 2010a).

There are also reasons to question the hypothesized superiority of a focused CF approach. It could be argued that focused CF is rather a form of explicit grammar instruction than a focus-on-form intervention (e.g. Bruton, 2009a). This might make it more difficult for learners to transfer what is learned from the feedback to new writing situations (e.g. Segalowitz, 1997; 2000). Additionally, Ferris (2010) and Storch (2010) noted that, from a practical perspective, only targeting specific error types might not be enough; teachers’ purpose in correcting their pupils' written work is (among other things) improving accuracy in general, not just the use of one grammatical feature. Anderson (2010) furthermore added that “[e]specially for content teachers who still wish to address linguistic concerns alongside regular class content, the use of very focused feedback […] is impractical” (Anderson, 2010, p. 5). Finally, observing that some of their errors have been corrected while others have not, might be rather confusing for students.
Direct and indirect CF
The second much discussed contrast is that between direct and indirect error correction. The main factor distinguishing these two types of CF is the learner’s involvement in the correction process. Whereas direct CF consists of an indication of the error and the corresponding correct linguistic form, indirect CF only indicates that an error has been made. Instead of the teacher providing the target form, it is left to the learner to correct his own errors. Indirect correction methods can take different forms that vary in their explicitness (e.g. underlining of errors, coding of errors).

Various hypotheses considering the relative effectiveness of direct and indirect CF have been put forward, some in favor of direct error correction, others supporting the indirect approach.

On the one hand, it has been suggested that learners will benefit more from indirect CF because they have to engage in a more profound form of language processing when they are self-editing their writing (e.g. Ferris, 1995; Lalande, 1982). In this view, the value of the indirect approach lies in the fact that it “requires pupils to engage in guided learning and problem solving and, as a result, promotes the type of reflection that is more likely to foster long-term acquisition” (Bitchener & Knoch, 2008, p. 415).

Advocates of direct CF (e.g. Chandler, 2003), on the other hand, have claimed that the indirect approach might fail because indirect CF provides learners with insufficient information to resolve complex errors (e.g. syntactic errors). Chandler (2003) furthermore argued that, whereas direct CF enables learners to instantly internalize the correct form as provided by their teacher, learners whose errors are corrected indirectly do not know if their own hypothesized corrections are indeed accurate. This delay in access to the target form might level out the potential advantage of the additional cognitive effort associated with indirect CF. Additionally, Bitchener and Knoch (2010b) suggested that only direct CF offers learners the kind of explicit information that is needed for testing hypotheses about the target language.

It has also been suggested that the relative effectiveness of direct and indirect CF methodologies might be determined by several intervening factors. Some researchers have argued, for example, that indirect CF might be less advantageous to lower proficiency L2 learners, since they lack the level of meta-linguistic awareness that is necessary to self-correct their errors (e.g. Ferris, 2004; Hyland & Hyland, 2006). Secondly, Ferris (1999, 2002) proposed that the effectiveness of different CF methodologies is dependent on the type of error targeted. She claimed that rule-governed errors might make good candidates for self-correction based on indirect CF, but that learners need more explicit information in
the form of direct CF to be able to solve problems that are more idiosyncratic in nature. Ferris (2010) furthermore argued that the goal a teacher tries to achieve by providing CF might influence one’s predictions concerning the differential efficacy of direct and indirect correction. She explained that, when mainly aiming for language learning, direct correction might be considered the most beneficial approach because it provides the kind of efficient and explicit input necessary for acquisition. When opting to help students in developing meta-cognitive, revision, and editing skills, on the other hand, indirect CF methods might prove more useful because they demand a more active form of learner engagement. Finally, Ellis et al. (2008) argued that the success of direct and indirect correction is dependent on the type of knowledge a teacher opts to transfer. They stated that both direct and indirect CF could be expected to foster the reinforcement of already (partially) acquired knowledge, but that the indirect method fails to assist the internalization of new linguistic forms.

2.4.2 Which errors to correct
Apart from theorizing about the most effective CF methodology, researchers have also been concerned with the question which errors to target when providing CF. Various proposals have been advanced in relation to this issue.

Corder (1967), for example, differentiated between errors and mistakes. Errors, in his view, reveal gaps in learners’ interlanguage system, and will therefore be systematic themselves. Unsystematic inaccuracies (i.e. slips of the tongue/pen), on the other hand, arise due to performance failures such as memory limitations. Corder suggested that it is useful to correct learners’ errors but not their mistakes.

Burt (1975; Burt and Kiparsky, 1972) distinguished between global and local errors. He labeled errors that could lead to communication breakdown by interfering with the comprehensibility of the utterance, global errors (e.g. word order errors, lexical errors), whereas minor linguistic violations that do not affect the intended meaning of a message were categorized as local errors (e.g. morphological errors). Hendrickson (1978) recommended teachers to only correct global errors since they impair communication.

Although Krashen (1981; 1982; 1985) denied CF to have any role in L2 acquisition, he stated that CF could have value in enabling learners to monitor their L2 production. However, Krashen noted that this potentially facilitative effect of CF is limited to simple and portable features (e.g. third person –s in English), and that CF should therefore only target this type of errors.
Finally, Ferris (1999; 2002) made a distinction between treatable and untreatable errors. She labeled non-idiomatic or idiosyncratic errors as untreatable (e.g. lexical errors), and categorized errors in patterned and rule-governed features as treatable problems (e.g. article errors). Ferris suggested that CF would be most likely to be successful when directed at treatable inaccuracies.

In fact, problems exist with all of the above proposals, and no clear theoretical basis has been provided for any of them. Ellis (2009) argued, for example, that the dichotomy between errors and mistakes is not as strict as Corder (1967) presented it to be, and stated that “the gravity of an error is to a very considerable extent a matter of personal opinion” (Ellis, 2009b, p. 6). He furthermore noted that there are no theoretical grounds on which teachers or researchers can decide whether an error is simple and portable. The same holds for Ferris’ dichotomy between treatable and untreatable errors.

In my opinion, the only distinction that is readily operationalizable is the contrast between grammatical errors and errors outside the grammatical domain, as proposed by Truscott (e.g. 1996; 2001; 2007). Like Krashen, Truscott predicted CF to have no potential value for the development of grammatical competence. He claimed that CF is unable to affect the rules underlying grammatical errors, and suggested that CF could only be beneficial for errors that “are relatively simple and can be treated as discrete items rather than integral parts of a complex system” (Truscott, 2007, p. 258), such as spelling errors. Interestingly, in applying this discreteness criterion, Truscott’s predictions concerning the amenability of some types of errors are contradicting those of Ferris (1999, 2002). Whereas Truscott (2001) claimed that lexical errors, for example, belong to the most correctible L2 problems because they are relatively discrete, Ferris suggested that it is precisely the idiosyncrasy of lexical errors which makes them less suitable targets for CF.

2.5 Synthesis and critical review of empirical CF work

Because the role of written CF in L2 acquisition is still a controversial one, the topic has been and still is attracting a lot of research attention. The present review focuses on the body of empirical studies that opted to add to the writing-to-learn agenda by investigating if CF facilitates learners’ written accuracy development⁶. This section will consecutively

⁶ Although the writing-to-learn agenda also involves research on the question how CF contributes to SLA processes such as noticing (e.g. Santos et al., 2010; Storch & Wigglesworth, 2010; Swain & Lapkin, 2002; Qi &
discuss insights concerning (1) the potential of CF in yielding accuracy improvement, (2) the
differential effectiveness of direct and indirect correction methodologies, (3) the amenability
of different error types to CF, and (4) the possible negative side-effects of error correction.

2.5.1 Research into the effectiveness of written CF

Early research
The earlier work on the effect of CF on L2 learners' written accuracy could be categorized
into two strands. While the first set of studies focused on the role of CF during the revision
process (e.g. Ashwell, 2000; Fathman & Whalley, 1990; Ferris, 1997; Ferris & Roberts,
2001), the second group of investigations set out to answer the question if correction yields
a learning effect (e.g. Chandler, 2003; Kepner, 1991; Polio et al., 1998; Semke, 1984;

The revision studies revealed that CF enables L2 students to improve the accuracy
of a particular piece of writing during revision (e.g. Ashwell, 2000; Fathman & Whalley,
1990; Ferris, 1997; Ferris & Roberts, 2001). This finding is valuable from a learning-to-write
perspective because it shows that CF has the ability to help learners develop more effective
revision and self-editing skills (Ferris, 2010). From an SLA viewpoint, however, such
revision studies are less compelling. Polio et al. (1998) already identified development (i.e.
the long-term effects of pedagogical interventions such as CF) to be the ultimate concern of
SLA research. Truscott and Hsu (2008) were therefore right in claiming that, in only
comparing two versions of the same text, the revision studies do not provide evidence of L2
acquisition. Instead, evaluating the potential of CF in yielding a learning effect would
necessarily involve “a comparison between two independently written works” (Truscott &
Hsu, 2008, p. 293).

Studies that could shed light on the role of error correction in accuracy development
are the ones that investigate the effect of CF on new pieces of writing. Earlier studies that
did opt to provide insights into the SLA potential of CF, however, rendered inconclusive
results (e.g. Chandler, 2003; Kepner, 1991; Polio et al., 1998; Semke, 1984; Sheppard,
1992). Since their conflicting findings could be attributed to methodological issues (such as
time-on-task differences or the lack of a control group7), both opponents (e.g. Truscott,

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7 See Chapter 3, Ferris (2004), or Guenette (2007) for reviews of these design related problems.
Recent research
The above mentioned appeal has resulted in a growing body of tightly controlled investigations, exploring the long-term effects of CF on L2 writing, by comparing learners’ accuracy performance on pre-tests and (delayed) post-tests. When considering the type of feedback under investigation, these studies fall into three groups: those evaluating the effectiveness of focused CF, those examining the effects of comprehensive or unfocused correction, and those comparing the efficacy of focused to that of unfocused CF approaches.

Research into the effectiveness of focused CF
Most recent CF research explored the effects of focused CF (e.g. Bitchener, 2008; Bitchener & Knoch, 2008; Bitchener & Knoch, 2009; Bitchener & Knoch, 2010a; Bitchener & Knoch, 2010b; Ellis et al., 2008; Sheen, 2007; Sheen, 2010b). Following the methodology of oral feedback studies (e.g. Lyster, 2004; Ellis, Loewen, & Erlam, 2006), the focused CF approach targets specific, persistently problematic features only (e.g. errors in the use of English articles), leaving errors outside the focus domain uncorrected. These tightly controlled studies all found robust positive effects of focused CF\(^8\). Moreover, the reported accuracy gains proved to be very durable; Bitchener and Knoch (2010a), for example, showed that students who had received focused CF (only once) continued to outperform students whose errors had not been corrected over a 10-month period.

Research into the effectiveness of unfocused CF
As compared to the growing amount of evidence on the effectiveness of focused CF, proof on the (in)efficacy of comprehensive or unfocused CF is practically non-existent. Only one recent study that I am aware of, aimed at investigating its potential to aid SLA (Truscott & Hsu, 2008).

Truscott and Hsu (2008) contrasted a group receiving unfocused CF with a control group whose errors were not corrected. Truscott and Hsu found that, while comprehensive CF enabled their learners to improve the accuracy of a particular text during revision, it did not lead to accuracy gains in a new text. However, the fact that unfocused CF did not lead

\(^8\) See Xu (2009), however, for a critical discussion of the findings by Bitchener (2008) and Ellis et al. (2008), and see Bitchener (2009) for a response. See also Storch (2010) for an apprehensive review of recent CF studies.
to learning in this study might have been attributable to a ceiling effect (Bruton, 2009a); the
texts learners wrote during the pre-test held very few errors to begin with, and, as a result,
little room was left for CF invoked improvement in the post-test.

**Research into the relative effectiveness of focused and unfocused CF**

Little is known about the relative effectiveness of focused and unfocused CF. The only two
studies addressing this issue are Ellis et al. (2008) and Sheen, Wright, and Moldawa
(2009), but results from those two studies contradict each other. Whereas Ellis et al. (2008)
did not find any difference in accuracy gains between their focused and unfocused CF
groups, Sheen et al. (2009) reported an advantage of selective correction over
comprehensive CF. However, both studies suffered from methodological issues as will be
argued in Chapter 4 (see also Xu, 2009 for a critical review of the findings by Ellis et al.,
2008).

**2.5.2 Research into the differential efficacy of direct and indirect CF methodologies**

As already explained, different CF methodologies have often been categorized as either
direct or indirect types of correction, and various hypotheses concerning their relative
effectiveness have been put forward. Although a reasonable number of studies opted to
gain insights into the differential effects of direct and indirect CF on learners’ written
accuracy development, empirical findings have not yet been able to confirm any of the
predictions made in the literature. Results from studies that contrasted the effects of direct
and indirect CF (e.g. Chandler, 2003; Ferris, 2006; Frantzen, 1995; Lalande, 1982; Rob,
Ross, & Shortreed, 1986) produced conflicting results. The main cause of this lack of
convergence could be found in design-related and analytical flaws, as will be explained
below.

Lalande (1982), who compared the effect of direct correction to the provision of error
codes (i.e. indirect form of CF) on the accuracy development of 60 learners of German as a
foreign language, reported an advantage of indirect over direct CF. However, the observed
between-group difference in accuracy gains was not statistically significant. Moreover, the
two treatments differed in more respects than just the method of CF provision; the indirect
group was engaged in more form-focused activities than the group receiving direct CF.

Ferris (2006) also reported an advantage of indirect CF over direct correction in
improving the accuracy of 86 ESL students’ writing over time. However, Ferris’ study was
not initially designed to directly compare the two CF methodologies. She set out to explore
the value of indirect CF only, but found that the teachers in her study addressed different types of errors with different forms of CF. Conclusions on the differential value of direct and indirect CF for learners’ general accuracy development are therefore unwarranted.

Chandler’s (2003) study investigated the accuracy development of 20 ESL learners consecutively receiving direct CF and three types of indirect CF (i.e. underlining of errors with description, underlining only, and description only). She concluded that direct CF was the most effective approach. However, the reported difference between direct CF and one type of indirect correction (i.e. underlining only) was not significant. Additionally, the fact that students received all four feedback types in an only “partial balanced incomplete block design” (p. 281), makes it difficult – if not impossible – to come to any conclusions on the differential value of direct and indirect CF methodologies.

Finally, studies by Frantzen (1995) and Robb, Ross, and Shortreed (1986) failed to find any clear differences in accuracy improvement between groups receiving direct CF and groups whose errors were corrected indirectly. These studies are therefore equally unable to provide insights into the relative efficacy of direct and indirect correction.

One tightly controlled study that investigated the effectiveness of two types of direct correction and one type of indirect CF (Bitchener & Knoch, 2010b), reported an advantage of direct correction. Whereas in this study direct and indirect CF proved to be equally effective in improving learners’ accurate use of English articles over a one week period, only the effect of the two direct CF treatments was still present ten weeks later.

2.5.3 Research into the value of CF for different error types
It has been argued that one could not expect all linguistic errors to be equally amenable to (the same type of) CF (e.g. Ferris, 1999; Truscott, 1996), because morphological, syntactic, and lexical errors represent gaps within different domains of linguistic knowledge (e.g. Schwartz, 1993). Although various hypotheses regarding the CF responsiveness of different types of errors have been forwarded over the years, the question which errors to correct remains an empirical one.

A number of studies explored the effects of CF on separate error types, and all reported differing levels of improvement for different types of errors (e.g. Bitchener, Young, & Cameron, 2005; Ferris, 2006; Ferris & Roberts, 2001; Frantzen, 1995; Lalande, 1982; Sheppard, 1992). Ferris (2006), for example, differentiated between five major error categories (i.e. verb errors, noun errors, article errors, lexical errors, and sentence structure errors), and found that students receiving CF only realized a significant reduction from pre-test to post-test in verb errors. Furthermore, Lalande (1982) discerned 12 error types, and
observed that correction only led to a significant decrease in orthographical errors. Bitchener et al. (2005) investigated how CF influenced learners’ accuracy development on three target structures, and found that CF had a greater effect on the accuracy of past simple tense and articles than on the correct usage of prepositions.

These findings show that the type of the error that is targeted, might influence the efficacy of the provided CF. In my view, however, the earlier work has been too heterogeneous (with respect to the types of errors under investigation, CF type, research design and context, etc.) to be able to come to any definitive conclusions on the correctability of different error types.

### 2.5.4 Research into the potential harmful side-effects of CF

As was explained in section 2.3.3, one of the reasons for CF opponents (e.g. Truscott, 1996) to object against the use of CF in L2 (writing) classes, is that it may lead to simplified writing by triggering learners to avoid situations in which they make errors. These considerations led Truscott (2004; 2007) to propose that accuracy gains found in earlier correction studies (e.g. Chandler, 2003) might well have been attributable to such avoidance and simplified writing instead of to CF.

Few studies have investigated the influence of written CF on linguistic complexity. However, studies that did (e.g. Chandler, 2003; Robb et al., 1986; Sheppard, 1992), could not come to any warranted conclusions because of inadequate methodology and analysis.

Sheppard (1992) – in a study with a fairly small sample size (N = 26) – found that the writing of both his CF group and his control group (who received feedback focusing on idea generation and formulation) became less complex over time. While this decrease in structural complexity (i.e. measured by means of a subordination index) was non-significant for the control group, it reached significance for the students who received CF. Sheppard reported, however, that the post-test performance of both groups on the complexity measure was not significantly different. Furthermore, it remains unclear from the available data if the pre-test writing of the two groups was equally complex. Without knowing if there was any initial between-group difference, no conclusions can be drawn about the effect of CF on written complexity.

Robb et al. (1986) reported a significant positive effect on written complexity of one of their CF treatments (i.e. indirect CF in the form of error codes). However, without a control group who did not receive CF, the reported beneficial effect of indirect CF cannot be taken as evidence against Truscott’s prediction that error correction leads to avoidance.
The same holds for Chandler (2003) who concluded that CF did not affect the complexity of students' writing. Besides the lack of a control group in this study, Chandler’s conclusion seems to be problematic for various reasons. She inferred that CF did not trigger simplified writing from the fact that holistic ratings of students' texts did not change significantly over the semester. First of all, one could never be sure if judges took notice of the complexity of students’ texts when rating them holistically. Moreover, it seems feasible that raters adjusted their standards in the course of time; what was judged to be a good or bad text at the beginning of a semester might not have been evaluated in the same way months later. Consequently, the fact that holistic ratings did not change cannot be claimed to prove that complexity did not either.

A second argument that led Truscott (1996; 2004) to conclude that CF should be expected to harm L2 learners’ accuracy development, is that it diverts time and energy away from more productive aspects of writing instruction. The only study that directly tested this claim by comparing the effects of CF to those of writing practice, is by Sheen et al. (2009). Their results showed that there was a trend ($p = .07$) for the focused CF treatment (targeting English articles) to result in larger accuracy gains than writing practice. The fact that this difference did not reach significance could well be related to the type of tasks used in this study. Students were asked to rewrite a short narrative after having read it themselves, and having listened to it read out loud by the teacher. As the authors acknowledge, this type of task could be seen as a noticing task which in itself promoted accuracy. Instead of contrasting CF to authentic communicative writing practice, Sheen et al.'s study actually compared two types of form-focused interventions differing in their level of explicitness. It might well be that the observed difference between CF and writing practice would have been greater if the tasks were less inherently focused on linguistic accuracy.

### 2.6 Open issues and rationale for the present work

In spite of the wealth of empirical studies that investigated the efficacy of written CF and the valuable insights they have provided, there are still many issues that deserve further exploration. This section explains how the three empirical studies reported in this

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9 The fact that Sheen et al. (2009) did not find unfocused CF to be more beneficial to writing practice, might be related to the unsystematic way in which this kind of feedback was provided (see also Chapter 4). In my opinion, this lack of systematicity makes any conclusion about the efficacy of unfocused CF unwarranted.
dissertation (cf. Chapters 3, 4, and 5) tried to contribute to some of the unsettled questions surrounding CF.

2.6.1 The value of comprehensive CF for L2 acquisition

Although recent studies provided ample proof for the value of focused or selective CF for L2 accuracy development, robust empirical evidence on the long-term effect of unfocused or comprehensive CF is lacking. There are several reasons, however, to consider exploring the learning potential of comprehensive correction important.

To begin with, comprehensive CF seems to be the most authentic feedback methodology. As noted by several researchers (e.g. Anderson, 2010; Ferris, 2010; Hartshorn et al., 2010; Storch, 2010), teachers who provide CF usually opt to improve the overall accuracy of their students’ writing, not just the use of one specific linguistic feature. Moreover, Bruton (2009a) questioned the extent to which the focused CF studies can still be considered to concern genuine L2 writing. In focusing on just one language feature their materials and CF rather seem to constitute written grammar exercises than authentic writing tasks. Xu (2009) addressed a similar point by stating that a clear focus on one grammatical structure may lead learners to consciously monitor the use of that target feature when performing the post-test(s). Finally, both Truscott (2010) and Ferris (2010) argued that the implications that can be drawn from focused CF studies so far are quite narrow, since they all targeted relatively simple linguistic problems (i.e. article errors). It remains to be seen if CF is also able to remedy more complex errors (e.g. word order errors).

While adopting the tightly controlled design of recent investigations into the effectiveness of focused CF (e.g. Bitchener & Knoch, 2010a), the three studies presented in this thesis (cf. Chapters 3 to 5) aimed to explore the ability of unfocused correction to yield a learning effect.

2.6.2 The differential value of direct and indirect CF

In spite of the intuitive appeal of the idea that indirect CF is more beneficial to L2 development than direct correction because it engages learners in reflective learning processes (e.g. Ferris, 2006), recent empirical findings seem to point in the opposite direction (Bitchener & Knoch, 2010b). However, the evidence to date is too scarce to lead to any definitive conclusions on the differential efficacy of direct and indirect CF methodologies. This issue deserves further investigation because it is important for teachers to know how their learners’ errors can be treated most effectively. The studies in this book (cf. Chapters 3 to 5) therefore contrasted direct and indirect CF.
2.6.3 Potential mediating factors in CF efficacy

In the previous sections it was already mentioned that the effectiveness of (a specific type of) error correction might be influenced by intervening factors, such as the nature of the targeted error or the goal a teacher pursues by providing CF. The studies presented in this thesis explored the mediating effects of three such factors: (1) error type, (2) a learner’s educational level, and (3) the topic of the writing task a learner receives feedback on.

Error types

Truscott (2001; 2007) stated that if CF has any value for L2 development, this could only be true for simple, non-grammatical errors, but not for errors in grammar. Since research to date did not yet directly or systematically test this hypothesis, the study presented in Chapter 4 investigated the effect of direct and indirect CF on grammatical problems (i.e. syntactic errors) and non-grammatical errors (i.e. spelling errors).

It could be expected, however, that within these two broad domains separate error types still differ in their level of CF responsiveness (e.g. Ferris, 1999; Truscott, 2001). The qualitative study presented in Chapter 5 therefore opted to provide a more detailed account of the amenability of different types of errors to written CF.

Educational level

The study reported in Chapter 4 furthermore set out to explore the potential mediating effect of learners’ educational level on the efficacy of direct and indirect CF. In the first place, this issue is worth investigating from a practical point of view; for teachers it is important to know if a single CF method is equally effective across different levels of education, or if it is the case that learners from different educational levels benefit from different types of correction.

It is theoretically plausible that the (relative) effectiveness of direct and indirect CF is indeed dependent on pupils’ educational level. In the Netherlands, pupils are enrolled in different levels of secondary education based on their performance on a national student assessment (i.e. Cito Eindtoets Basisonderwijs) covering reading comprehension, spelling, technical reading, listening and writing skills, vocabulary, math, social studies, and information processing (Cito, 2010). Since linguistic skills take up an important place in this assessment, it is to be expected that learners in different levels of Dutch secondary education vary in (among other things) their levels of language proficiency and metalinguistic awareness. This assumption is also supported by the fact that the Dutch national framework of reference for language skills sets different goals for pupils in different levels of
secondary education with respect to listening, reading, speaking, and writing skills and meta-linguistic knowledge (Expertgroep Doorlopende Leerlijnen Taal en Rekenen, 2008).

It has been claimed that factors such as learners' levels of language proficiency and meta-linguistic awareness influence the degree to which pupils are able to benefit from correction. Sheen (2007), for example, showed that CF was more effective in promoting noticing and understanding when students exposed greater capacity to engage in language analysis. More specifically, the relative effectiveness of direct and indirect CF has also been proposed to be dependent on a learner's level of (meta-)linguistic competence. It was hypothesized that lower proficiency learners might be unable to correct their own errors based on indirect CF (e.g. Ferris, 2004; Hyland & Hyland, 2006). Considering these predictions in the literature, exploring the influence of pupils' educational level on CF efficacy might also be interesting from a theoretical perspective.

Task topic
Previous research has suggested that it is not just a learner's level of L2 proficiency which determines the quality of his writing. Other factors, such as a task's topic, also proved to contribute to a learner's written performance (e.g. Meuffels & Van den Bergh, 2005; Schoonen, 2005). Specifically, the level of knowledge about, interest in, and familiarity with a certain topic have proven to influence writing performance (e.g. Benton, Sharp, Corkill, Downey, & Khramtsova, 1995; McCutchen, 1986). Another factor that might add to this task-effect is the conceptual complexity of a writing task (see Kuiken & Vedder, 2008 for a discussion about the effect of task complexity on L2 production). It might be that such factors also influence the extent to which a learner benefits from the CF he receives on his performance on a given task, on a given topic. If this would be the case, it would compromise the generalizability of findings yielded by CF studies. Chapter 3 therefore investigated if a task's topic mediates CF effectiveness.

2.6.4 Measuring written accuracy development
When trying to establish the effect of written CF on learners' accuracy development, the tasks and measures used to quantify the CF invoked improvement are of course of vital importance. Three related issues are worthy of further investigation.

Realistic writing tasks
To be able to validly assess the usefulness of CF to L2 learners' written accuracy development, it is important that the feedback is provided within a realistic writing context.
Long (2007) claimed, for example, that development can only be measured by examining language use during unmonitored production, when learners' focus is on content rather than on language as an object. In the same line, Ellis (2010) argued that free constructed responses constitute “the most valid measure of the effect that CF has on learners’ linguistic competence if this is defined as implicit knowledge (p. 345). The tasks used in earlier CF studies, however, have often been very constrained and artificial, with a clear focus on accuracy. Bruton (2009b) also identified this as one of the problems of previous CF studies (e.g. Bitchener, 2008; Bitchener & Knoch, 2008; Ellis et al., 2008; Sheen, 2007):

The writing tasks are not communicative in the least, since the students are not expected to express a message that has anything personal or new to say to someone else, the audience factor. They do not have clear writing purposes or goals, and there is no reference to the students knowing why they are writing. There […] [are] no criteria, except implicit correctness. (p. 608).

To overcome these task-related drawbacks the tasks used within the present experiments (cf. Chapters 3, 4, and 5) were realistic in set-up and had clear communicative goals.

In-depth measures
As did the majority of CF studies to date, the studies presented in Chapters 3 and 4 investigated the effectiveness of written CF by looking at group performances on global accuracy measures (i.e. number of errors per 100 words, number of error-free T-units, etc.) over time. For various reasons, however, it could be considered useful to also take a more detailed look at individual learners’ sequential accuracy performance.

Storch and Wigglesworth (2010), for example, argued that analyzing how learners actually use CF could provide insights on how and when learners benefit from error correction. Moreover, Bruton (2009a) suggested that detailed, qualitative analysis of learners' writing performance over time might give a more complete and accurate picture of the accuracy gains brought about by CF than the more common global measures. The multiple case-study presented in Chapter 5 therefore adopted the proposed in-depth approach to measuring accuracy development.
Potential harmful side-effects of CF
As explained in section 2.3.3, CF opponents (e.g. Krashen, 1982; Truscott, 1996) proposed that error correction might be expected to harm rather than to foster learners’ interlanguage development. Two arguments have been advanced for this claim: (1) CF was thought to lead to avoidance of more complex language use, and (2) it was argued that it is more effective for teachers to spend their valuable time to extra writing practice than to correction and revision.

Earlier studies have been unable to refute these hypothesized negative side-effects of CF. Hence, the present work set out to investigate the effect of CF on the lexical and structural complexity of learners’ writing (Chapter 4), and also compared the accuracy performance of learners receiving CF to pupils who had an extra opportunity to practice their writing skills (Chapter 3 and 4).

2.7 Concluding remarks
As was explained in the previous section, issues such as if, how, and when comprehensive CF fosters SLA, the relative efficacy of direct and indirect correction, factors mediating CF effectiveness, and the potential harmful side-effects of written error correction, deserve further empirical investigation. The studies presented in the following three chapters (i.e. Chapters 3, 4, and 5) aimed to advance the understanding of these matters.