Lang. Teach. (2013), **46.1**, 1–40 © Cambridge University Press 2012
doi:10.1017/S0261444812000365

State-of-the-Art Article

Oral corrective feedback in second language classrooms

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This article reviews research on oral corrective feedback (CF) in second language (L2) classrooms. Various types of oral CF are first identified, and the results of research revealing CF frequency across instructional contexts are presented. Research on CF preferences is then reviewed, revealing a tendency for learners to prefer receiving CF more than teachers feel they should provide it. Next, theoretical perspectives in support of CF are presented and some contentious issues addressed related to the role of learner uptake, the role of instruction, and the overall purpose of CF: to initiate the acquisition of new knowledge or to consolidate already acquired knowledge. A brief review of laboratory studies assessing the effects of recasts is then presented before we focus on classroom studies assessing the effects of different types of CF. Many variables mediate CF effectiveness: of these, we discuss linguistic targets and learners' age in terms of both previous and prospective research. Finally, CF provided by learners and the potential benefits of strategy training for strengthening the role of CF during peer interaction are highlighted.

1. Introduction

Corrective feedback (CF) has been defined simply as 'responses to learner utterances containing an error' (Ellis 2006: 28) but also as a 'complex phenomenon with several functions' (Chaudron 1988: 152). Knowledge about this seemingly simple yet complex phenomenon continues to grow, as research accumulates on its role in L2 classrooms and its effects on L2 development. This research increasingly suggests that CF plays a pivotal role in the kind of scaffolding that teachers need to provide to individual learners to promote continuing L2 growth.

Indicative of the growing interest in CF, four meta-analyses of CF research were published between 2006 and 2010 (Russell & Spada 2006; Mackey & Goo 2007; Li 2010; Lyster &

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Saito 2010), which together provide strong support for the overall effectiveness of CF. Two of these meta-analyses included a comparison of the effect sizes yielded by classroom studies (involving interaction between a teacher and an intact class of students) and those yielded by laboratory studies (involving interaction between two individuals, usually a researcher and a learner). In both cases, laboratory studies showed significantly larger effect sizes than did classroom studies, a finding attributed by Mackey & Goo (2007) to 'the quantity and quality and often dyadic context for the provision of treatments in laboratory settings' (p. 443) and by Li (2010) to 'the fact that in the classroom context, there is more distraction, and feedback is often not directed toward individual learners' (p. 345). That contextual and pragmatic differences between laboratory and classroom settings have led to different learning outcomes motivates our decision, for this narrative account of oral CF, to focus on its role in classrooms settings.

In an oft-cited study, Gass, Mackey & Ross-Feldman (2005) concluded that 'interaction may not be as context-dependent as some researchers have claimed and may not vary depending on whether the participants are in the classroom or the laboratory' (p. 601). In their comparison of two groups of learners engaged in learner–learner interaction, one group completed tasks in the presence of a teacher in an intact classroom and the other completed the same tasks in the presence of a researcher in a laboratory setting. Both settings yielded a similar distribution of interactional features. However, the fact that learners completed peer-interaction tasks collaboratively in similar ways whether they were seated in a classroom or laboratory setting is unrelated to the distinction that it is necessary to make in CF research between teacher–student interaction in intact classrooms and interaction involving a researcher and a learner outside of the classroom. As Spada & Lightbown (2009) argued, 'classroom-based studies are most likely to lead to a better understanding about the kind of interaction that occurs in classrooms where the teacher is the only proficient speaker and interacts with a large number of learners' (p. 159). Accordingly, in this review, we adopt an educational perspective on CF, operationalized as an inherent part of classroom practices in which teachers engage to achieve instructional objectives that include consolidation of students' L2 knowledge. To do so, we make reference throughout to Hattie & Timperley's (2007) review of research on feedback in the education literature, aptly titled 'The power of feedback'.

We begin the review by identifying different types of CF in section 2, and their frequency and distribution across a range of instructional settings in section 3. Section 4 presents a review of research on CF preferences and section 5 summarizes various theoretical perspectives in support of CF followed by a discussion of some contentious issues including the role of uptake, instruction, and prior knowledge. Section 6 presents a brief review of laboratory studies assessing the effects of recasts and then homes in on classroom studies assessing the effects of different types of CF. Among the many variables mediating CF effectiveness, those we discuss in terms of both previous and prospective research include linguistic targets in section 7 and learners' age in section 8. Section 9 then discusses CF provided by learners and the role of strategy training designed to strengthen the role of CF during peer interaction. Section 10 concludes the review with a call for CF research invested with educational value.

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2. CF types

Based on their descriptive study of teacher–student interaction in French immersion classrooms, Lyster & Ranta (1997) identified six different CF types, which they subsequently classified into two broad CF categories: reformulations and prompts (Ranta & Lyster 2007). Reformulations include recasts and explicit correction, because both these moves supply learners with target reformulations of their non-target output. Prompts include a variety of signals other than reformulations that push learners to self-repair (i.e. elicitation, metalinguistic clues, clarification requests, and repetition). Drawing on this classification and on knowledge gained from a considerable amount of research on CF since 1997, Sheen & Ellis (2011: 594) suggested a similar taxonomy of oral CF strategies, which accounts for the distinction between reformulations and prompts as well as the distinction between implicit and explicit CF (see Table 1).

In addition to the inclusion of the seriously under-researched topic of paralinguistic signals (Schachter 1981), Sheen & Ellis (2011) also distinguish between conversational and didactic recasts. Recasts are often considered implicit (Long 1996, 2007; Long & Robinson 1998), but research has shown that, depending on their context and characteristics – such as linguistic targets, length, and number of changes made to the original utterance – they can also be quite explicit (Nicholas, Lightbown & Spada 2001; Sheen 2004, 2006; Ellis & Sheen 2006; Sato 2011). Because, in some foreign language settings, recasts have even been found to lead to learner repair as frequently as explicit correction, they have been considered tantamount to explicit correction in those contexts (Lochtman 2002; Lyster & Mori 2006). Defined in terms of 'perceptual salience' and 'linguistic marking' (Ortega 2009: 75), explicitness is a difficult variable to hold constant across classroom studies because learner perceptions of salience and linguistic marking are affected not only by learner variables such as age and metalinguistic knowledge but also by contextual variables such as the instructional context and its communicative orientation (Nicholas, Lightbown & Spada 2001; Ellis & Sheen 2006; Lyster & Mori 2006; Sato 2011).

Sheen & Ellis's taxonomy distinguishes between explicit CF that provides correct forms (i.e. didactic recasts and explicit correction with or without metalinguistic explanation) and explicit CF that withholds correct forms (i.e. metalinguistic clues and elicitation). Figure 1 illustrates CF types along a continuum that ranges from implicit to explicit and also according to the dichotomous distinction between reformulations and prompts. The classification of prompts along this continuum from implicit to explicit is tentatively based on suggestions by Ellis (2006) and Loewen & Nabei (2007) that clarification requests and repetition might be considered more implicit than elicitation and metalinguistic clues, but note that Li (2010) classified elicitation as implicit CF.

Of ongoing theoretical interest in CF research is the comparison of different types of CF, because they provide different types of linguistic evidence (either positive or negative). Positive evidence is information about what is possible in the language, provided through exposure to target exemplars in the input, whereas negative evidence is information about what is not possible in the language, usually provided through explanations or corrections (Gass 1997). With respect to CF types, explicit correction provides both negative and positive evidence;

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Table 1 CF types (adapted from Ranta & Lyster 2007; Sheen & Ellis 2011)

	Implicit	Explicit
Reformulations	Conversational recasts • a reformulation of a student utterance in an attempt to resolve a communication breakdown • often take the form of confirmation checks	Didactic recasts • a reformulation of a student utterance in the absence of a communication problem Explicit correction • a reformulation of a student utterance plus a clear indication of an error Explicit correction with metalinguistic explanation • in addition to signalling an error and providing the correct form, there is also a metalinguistic comment
Prompts	Repetition • a verbatim repetition of a student utterance, often with adjusted intonation to highlight the error Clarification request • a phrase such as 'Pardon?' and 'I don't understand' following a student utterance to indirectly signal an error	Metalinguistic clue • a brief metalinguistic statement aimed at eliciting a self-correction from the student Elicitation • directly elicits a self-correction from the student, often in the form of a wh-question Paralinguistic signal • an attempt to non-verbally elicit the correct form from the learner

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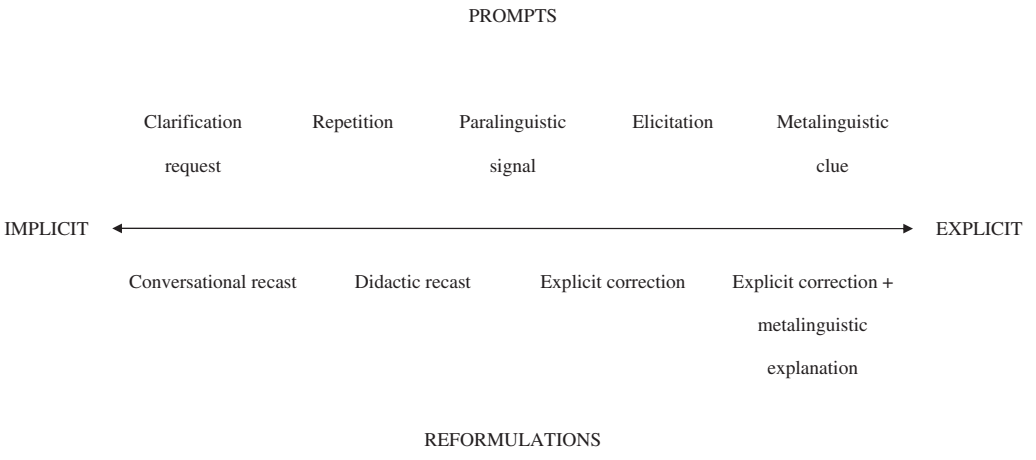

Figure 1 CF Types (adapted from Lyster & Saito 2010; Sheen & Ellis 2011)

prompts provide only negative evidence, whereas recasts provide not only positive but also negative evidence, if the learner perceives the feedback as an indication that an error has occurred.

We briefly note here a point that we will develop further in subsequent sections: the extent to which CF is considered either implicit or explicit is of particular relevance in research investigating Long's (1996) interaction hypothesis, which attributes a primary role to noticing target features in the input during interaction. Although learners are more likely to notice explicit CF than implicit CF (Mackey et al. 2007; Nassaji 2009) and prompts more than recasts (Ammar 2008), some researchers have tentatively suggested that the effects of implicit CF might be more robust (i.e. longer lasting) than those of explicit CF, which might be more effective in the short term (Mackey & Goo 2007, Li 2010; but see Ellis, Loewen & Erlam 2006). Complementary research drawing on skill-acquisition theory may be seen as less focused on the extent to which CF is either explicit or implicit, because its concern is less with instances of noticing CF and more with the opportunities afforded by CF for consolidating oral skills through contextualized practice. In this review of research on oral CF in classroom settings, we aim to highlight the educational value of CF as a tool not only for noticing target exemplars in the input but also for consolidating emergent L2 knowledge and skills.

3. CF frequency

Many classroom observational studies have documented the frequency and distribution of different CF types across a range of instructional settings. A selection of 12 descriptive studies appears in Table 2, arranged in increasing order of the rate of CF per hour. The low-frequency contexts (6–11 moves/hour) include high school EFL in China and Hong Kong, high school French L2 in Quebec, and English immersion in Korea. The high-frequency contexts (28–41

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Table 2 Twelve descriptive studies of classroom CF in ascending order of CF moves per hour

	Instructional context	Students' age	Number of teachers	Total hours	Total CF moves	CF moves per hour	Proportion of CF types		
							recasts	prompts	explicit correction
1	High school EFL in China (Yang 2009)	12–13 16–17	3	6	36	6	31%	61%	8%
2	High school French L2 in Quebec (Simard & Jean 2011)	11–16	4	12	73	6	25%	29%	46%
3	High school EFL in Hong Kong (Tsang 2004)	12–17	13	16	174	11	48%	38%	14%
4	English immersion in Korea (Lee 2007)	8–9	2	10	133	13	53%	39%	8%
5	Adult EFL in Korea (Sheen 2004)	29–36	2	12	186	16	83%	6%	11%
6	Adult ESL in New Zealand (Ellis, Basturkmen & Loewen 2001, recoded in Sheen 2004)	18–21	2	12	189	16	68%	19%	13%
7	Japanese immersion in USA (Lyster & Mori 2006)	9–10	2	15	259	17	65%	26%	9%
8	English & Spanish immersion in Senegal (Vicente-Rasoamalala 2009)	5–10 13–14	3	70	1186	17	12%	77%	11%
9	High school ESL in Quebec (Simard & Jean 2011)	11–16	4	8	235	28	41%	41%	18%
10	French immersion in Quebec (Lyster & Ranta 1997)	9–10	4	18	686	38	55%	38%	7%
11	German FL in Belgian Dutch-speaking high schools (Lochtman 2002)	15–16	3	10	394	39	30%	56%	14%
12	Adult ESL in Quebec (Panova & Lyster 2002)	17–55	1	10	412	41	77%	21%	2%

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moves/hour) include German as a foreign language (FL) in Dutch-speaking high schools in Belgium and three different contexts in Quebec: high school ESL, adult ESL, and French immersion. Explicit correction occurs least in all contexts except one, in which it occurs most frequently, namely, high school French L2 in Quebec. Recasts occur most frequently in seven of the twelve contexts. Recasts and prompts occur with equal frequency in high school ESL in Quebec; prompts prevail in English and Spanish immersion classrooms in Senegal, EFL classrooms in a Chinese high school, and German FL classrooms in Belgian high schools. There is thus considerable variety across these contexts. Although many reviews of CF research claim that recasts are the most frequently used type of CF, it is important to note that this is not necessarily the case across all instructional settings that have been observed.

4. CF preferences

Investigations of learner and teacher preferences for CF have been undertaken for two main reasons: first, learner preferences can influence learning behaviours (Grotjahn 1991; Borg 2003) and, second, mismatches between teachers' intentions and learners' interpretations of those intentions may result in negative effects on learning (Nunan 1989). Research on CF preferences is important, as it informs practitioners of learners' perspectives and, subsequently, may lead to more effective teaching practice when combined with results from the CF effectiveness research (see also Basturkmen, Loewen & Ellis 2004).

This line of research has revealed a clear tendency for learners to express a preference for receiving CF over having their errors ignored. Schulz (1996), for instance, reported that 90% of the questionnaire respondents in her study of eight different foreign language classes in the US thought that CF was imperative. Chenoweth et al. (1983) found that learners did not appreciate the absence of CF: 50% of the respondents in their study of ESL learners in the US expressed concern that they did not receive enough CF (see also Plonsky & Mills 2006). In their study of student and teacher perspectives on different aspects of grammar instruction, Jean & Simard (2011) investigated the beliefs of 2,321 high school students and 45 teachers in Canada. Using a questionnaire, which consisted of four parts including one on CF, they found that students were very favourable toward CF. The majority of the students stated that they would like to 'get their oral errors corrected all the time' (p. 474). In addition, Brown (2009) reported that learners think that a quality of effective teachers is to be able to correct oral errors immediately. There is, nonetheless, some variation in the degree to which learners want to be corrected. For instance, learners in Lasagabaster & Sierra's (2005) study stated that constant correction may inhibit communication and expressed a preference for focused CF on selected errors, whereas 80% of the learners in Oladejo's (1993) study of EFL learners in Singapore reported that CF does not inhibit their willingness to communicate in the target language.

Although the general tendency for students to prefer receiving CF is consistent across most contexts, some studies have reported that the strength of the preference varies according to learners' cultural backgrounds, previous and current language learning experiences, or proficiency levels. Schulz (2001) compared learners' and teachers' preferences for CF in the

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US and Colombia and found that grammar teaching entailing CF was favoured more by learners and teachers in Colombia than by those in the US. She attributed favourable attitudes towards grammar instruction and CF to (a) traditional ways in which foreign languages are taught and tested, (b) beliefs passed on from the past about the usefulness of grammar study, or (c) actual personal experiences of benefitting from rule awareness and CF. Loewen et al. (2009) surveyed language classes of eight different language groups at an American university, and found that learners of English (51% of whom claimed Korean as their L1 and 20% Chinese) had the strongest dislike of CF (and the least concern for grammatical accuracy), whereas foreign language learners of Arabic, Chinese, and various less commonly taught languages (whose L1 for the most part was English) had the most positive attitudes towards CF and grammatical accuracy. Therefore, being immersed in the environment of the target language may play a bigger role than a learner's foreign language learning background in determining attitudes towards CF and grammar instruction. That is, ESL learners, in spite of their foreign language learning background, placed greater emphasis on communication than on grammar and CF, whereas the foreign language learners without opportunities to use the target language outside the classroom valued grammar instruction and CF more (see also Gass & Lewis 2007).

In the preference literature, some studies have investigated CF types. For example, Yoshida (2008b) compared learners' preferences for recasts in comparison to other types of CF (including prompts). Seven learners of Japanese in Australia participated in stimulated recall sessions and most of them expressed a preference for being given time to self-repair rather than being given the correct form right away. However, this was the case when they believed they knew the correct form, which implies a practical difficulty for teachers: how are they to give the type of CF that their students wish to receive? Consequently, the two teachers in Yoshida (2008b) reported that, although they believed prompts to be beneficial in that they give learners a chance to work out linguistic problems, they preferred giving recasts because they are conducive to maintaining a 'supportive classroom environment' (p. 89) and are also more efficient with respect to time management (see also Brandl 1995). Brown (2009) compared first- and second-year university students and found that second-year students – who were more advanced – had a stronger preference for indirect rather than direct types of CF than did first-year students. A tendency for learners with higher proficiency to prefer to work out errors on their own is understandable, because the likelihood of self-repair increases as learners become more proficient in the target language.

A mismatch between learners' wish to receive CF and teachers' views on providing CF has been widely reported. That is, the extent to which learners want to be corrected is generally greater than teachers' wish to provide correction. For example, in Cathcart & Olsen's (1976) study, ESL students responded almost unanimously that they wished to be corrected, but teachers exhibited clear hesitations about doing so. In Jean & Simard's (2011) study, teachers expressed a preference for correcting only errors that impede communication, so as not to interrupt the flow of communication and not to diminish their students' confidence. Teachers' concerns regarding CF thus tend to be twofold: first, they believe that CF can break the communicative flow and thus have an adverse effect on communicativeness (Brown 2009); second, they believe that CF can induce language anxiety because learners may lose face by being corrected in front of others (Lasagabaster & Sierra 2005).

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In a multiple-case study on teacher perceptions of CF, Vásquez & Harvey (2010) carried out a partial replication of Lyster & Ranta's (1997) study in an SLA course in a large university in the US. The main purpose of their study was to examine whether graduate students, who were enrolled in the course and were also L2 teachers, would change their views on CF after participating in a research replication. In small groups, they videotaped a group member who was an L2 teacher, transcribed and coded the interactional moves, and wrote reflective journal entries. Initially, teachers expressed concern that CF entailed very complicated decisions and raised many questions about its appropriateness, frequency, and effectiveness, and how it might directly affect students' self-esteem and motivation in a negative manner. By the end of the study, however, 'their preoccupation with learner affect appeared to decrease' as they 'became aware of other variables associated with corrective feedback', which included 'the relationship between feedback and uptake, the interaction between error type and feedback, understanding the differences between various feedback moves that supply learners with correct responses versus those feedback moves that do not' (Vásquez & Harvey 2010: 437; see also Bell 2005; Baleghizadeh & Rezaei 2010; Busch 2010). Worthy of further pursuit would be similar explorations of how teacher education courses and other professional learning opportunities might draw on classroom research to close the apparent gap between students' preferences for receiving CF and teachers' reluctance to offer it.

5. Theoretical issues

Research on learner preferences is not alone in supporting the use of CF in L2 classrooms; various accounts of L2 development also provide support. Theoretical perspectives that run the gamut from cognitively to socially oriented suggest that CF is not only beneficial but may also be necessary for moving learners forward in their L2 development. For example, a cognitive-interactionist perspective attributes a role not only to positive evidence but also to negative evidence in the form of CF that triggers noticing of non-target output (see Long 1996; Gass 1997). Skill acquisition theory attributes a pivotal role to CF, specifically in the context of practice that leads learners from effortful to more automatic L2 use (e.g. Ranta & Lyster 2007; Lyster & Sato in press). According to sociocultural theory, CF provides learners with dialogically negotiated assistance as they move from other-regulation towards self-regulation (e.g. Aljaafreh & Lantolf 1994; Nassaji & Swain 2000; Sato & Ballinger 2012).

Also of theoretical relevance is the notion of transfer-appropriate processing, according to which the kind of cognitive processing that occurs during learning tasks should ideally resemble the kind of processing involved during actual language use (e.g. Segalowitz 1997, 2000; Lightbown 2008a; Lyster & Sato in press). That is, the learning that results from CF provided during contextualized language use is more likely to transfer to similar contexts of spontaneous oral production than learning that might result from decontextualized language analysis (Lyster & Saito 2010). For this reason, some researchers suggest that CF is most likely to be effective when provided 'within the context of meaningful and sustained communicative interaction' (Spada & Lightbown 1993: 218; see also Lightbown & Spada 1990; Lightbown 1991, 1998; Long 1991, 1996; Doughty 2001). Nonetheless, the effectiveness of immediate

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vs. delayed CF (e.g. Rolin-Ianziti 2010) is an interesting avenue for further exploration in the context of 'isolated form-focused instruction' provided 'after an activity in which students have experienced difficulty with a particular language feature' (Spada & Lightbown 2008: 186).

Within the cognitive-interactionist perspective, the interaction hypothesis (Pica 1994; Long 1996; Gass 1997) predicts that L2 development will occur when a learner engages in negotiation for meaning that results from message incomprehensibility during interaction. Interaction provides learners with opportunities to control the input to some extent, as they ask their interlocutors to modify their speech in ways that make the input more accessible and more likely to be integrated into the learners' developing interlanguage system. In addition, interaction enables learners to test their hypotheses, providing them with crucial information about their communicative success along with valuable opportunities for modifying their non-target output.

Following first language (L1) acquisition studies such as those by Farrar (1990, 1992), the interaction hypothesis attributes an important role to recasts, hypothesizing that they create ideal opportunities for learners to notice the difference between their interlanguage forms and target-like reformulations while preserving their intended meaning. That is, recasts are hypothesized to provide learners with a primary source of negative evidence while freeing up cognitive resources that would otherwise be used for semantic processing. Recasts are purported to derive their effectiveness from their implicit and non-obtrusive delivery, while prompts and explicit correction are considered less effective, according to Long (2007), because they allegedly interrupt communication and thus impede acquisition.

Recasts can be considered 'pedagogically expeditious' (Loewen & Philp 2006: 551) as well as propitious for fulfilling important discourse functions that help either to move lessons forward (Lyster 1998a) or to promote a shift towards a more academic register in content-based instructional contexts (Mohan & Beckett 2001; Gibbons 2003). Recasts are well suited to communicative classroom discourse, because they tend not to interrupt the flow of communication, keep students' attention focused on meaning, and provide scaffolds that enable learners to participate in interaction that requires linguistic abilities exceeding their current developmental level. Whether classroom learners are able to infer negative evidence from recasts, as predicted by the interaction hypothesis, however, depends on whether the discourse context in which the recasts are delivered enables learners to perceive them as didactic recasts, serving to disapprove the form, rather than as conversational recasts, appearing to approve the meaning. This may be more likely in form-oriented classrooms where the emphasis on accuracy primes learners to notice the corrective function of recasts (Nicholas et al. 2001; Ellis & Sheen 2006; Lyster & Mori 2006; Lyster 2007; Sato 2011).

Because recasts are inherent to conversational interaction and serve to incite learners to notice the gap between their non-target output and target forms in the input, they derive direct theoretical support from the interaction hypothesis. Prompts, as didactic moves aiming to elicit self-repair without providing exemplars of the target form, derive more direct theoretical support from skill acquisition theory (Anderson 1980) and also the output hypothesis (Swain 1985). Skill acquisition theory postulates that L2 learning entails a gradual transition from effortful to more automatic use of the target language, brought about through practice and feedback in meaningful contexts (DeKeyser 1998, 2001, 2007), and thus explicitly

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acknowledges a role for CF and its inextricable link with practice. In this view, CF in general – and prompts in particular – can serve to scaffold opportunities for guided practice in the context of communicative interaction. As with other types of practice, prompts aim to improve control over already-internalized forms by providing opportunities for pushed output, hypothesized by Swain (1985, 1988) to move interlanguage development forward. In his account of the output hypothesis, de Bot (1996) argued that L2 learners benefit more from being pushed to retrieve target language forms than from merely hearing the forms in the input, because retrieval and subsequent production can strengthen associations in memory. The results of research in experimental psychology on the 'generation effect' (Clark 1995) also predict, for similar reasons, that prompts will be more effective than recasts. This line of experimental research has consistently found that learners remember information better when they take an active part in producing it, rather than having it provided by an external source (e.g. deWinstanley & Bjork 2004). Further support for CF types other than recasts comes from sociocultural theory, according to which learning involves moving away from other-repair toward more reliance on self-repair (Aljaafreh & Lantolf 1994). Because prompts resemble the 'clueing' procedure or 'withholding phenomenon' identified by McHoul (1990) in his study of feedback in subject-matter classrooms, they fit well with instructional discourse.

While a range of theoretical perspectives converge to support the use of CF in L2 classrooms, different (yet not incompatible) theoretical accounts have been invoked to explain the potential effects of some CF types more than others, especially concerning explicit vs. implicit CF, negative vs. positive evidence, and prompts vs. recasts. These differences have given rise to various contentious issues in terms of both theory and methodology, three of which we address in the following sections: the role of learner uptake, the role of prior knowledge, and the role of instruction.

5.1 Learner uptake

A somewhat contentious issue in both theoretical and methodological terms is the significance of learner uptake. With the aim of examining the illocutionary force of CF and to refer to the range of possible utterances made by students in response to CF, Lyster & Ranta (1997) borrowed the term UPTAKE from speech act theory (Austin 1962). Uptake was defined as a discourse move and not as an instance of acquisition, although some researchers have suggested that uptake may be 'related to learners' perceptions about feedback at the time of feedback' (Mackey, Gass & McDonough 2000: 492) or 'FACILITATIVE of acquisition' (emphasis in the original; Ellis, Basturkmen & Loewen 2001: 287). Quantity of uptake is predicted by Robinson's (2011) cognition hypothesis to be a positive indicator of task complexity, with uptake and retention of linguistic forms associated with recasts provided during cognitively complex tasks to a greater degree than during simpler tasks. A prediction that has arisen from descriptive studies of different types of CF and uptake, and that can only be tested in experimental studies, is that different types of repair are likely to affect L2 development differentially over time, because different types of repair entail different types of processing.

Lyster & Ranta (1997) were not the first to quantify learner responses immediately following feedback (e.g. Chaudron 1977; Brock et al. 1986; Gass & Varonis 1989; Doughty 1994;

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Oliver 1995). Oliver (1995), for example, coded learner responses to CF in one of four ways: respond, ignore, no chance (to respond), continue. In Lyster & Ranta's taxonomy, learner uptake was coded as either (a) utterances still in need of repair or (b) utterances with repair. Learner responses with repair are of greater value than responses still in need of repair, because the latter include simple acknowledgements such as 'yes', hesitations, off-target responses, partial repair, and occurrences of either the same or a different error. Learner repair entails the correct reformulation of an error and thus differs from modified output, which may or may not be a correct reformulation. Learner repair can be either a repetition or self-repair, and these different types of immediate repair are specific to one type of CF or another: recasts and explicit correction can lead only to repetition of correct forms by students, whereas prompts can lead, not to repetition, but either to self-repair or peer-repair.

Lyster & Ranta's (1997) data-driven model of an error treatment sequence comprising CF and uptake options served to reveal discrepant occurrences of immediate repair across instructional settings: infrequent repair has been observed after recasts in French immersion classrooms in Canada (Lyster & Ranta 1997), English immersion classrooms in Korea (Lee 2007), adult ESL classrooms in Canada (Panova & Lyster 2002), and EFL classrooms in Hong Kong secondary schools (Tsang 2004), but more frequent repair following recasts has been observed in Japanese immersion classrooms in the US (Mori 2002), adult ESL classrooms in New Zealand (Ellis et al. 2001), and adult EFL conversation classes in Korea (Sheen 2004). The low rate of repair following recasts in some contexts was due to the fact that teachers often followed recasts with topic-continuation moves that prevented students from responding. If these instances had been excluded from the analyses, occurrences of repair following recasts would have increased, as in Oliver's (1995) study of child dyads, which showed an increase from 10% to 35% in the number of repetitions after recasts. Yet because the teachers observed in classrooms with low rates of repair after recasts had used them in ways that prevented immediate repair, accounting for such instances seems critical if the research objective is to examine the overall capacity of recasts for drawing learners' attention to form. The coding of instances where learners have no opportunity to respond is nonetheless important, because it serves to demonstrate, as Oliver (2000) acknowledged, 'that the nature of whole class interactions diminishes the opportunity for students to respond to the feedback' (p. 126).

As to whether repetitions of recasts are of any value, some studies have found that, when learners repeat a recast, they are more likely to perceive its corrective intention subsequently, during stimulated recall sessions (e.g. Mackey et al. 2000; Egi 2010). Révész, Sachs & Mackey (2011) found in their study of high school EFL learners in Hungary that immediate repair following recasts of past progressive forms was a strong positive predictor of development when learners engaged in less complex, but not more complex, tasks. Loewen & Philp (2006) found in their classroom study with adult ESL learners, however, that successful repair following recasts did not predict accuracy on posttest scores. Other studies conducted in laboratory settings also suggest that the potential effects of recasts on L2 development may be unrelated to immediate repair (Mackey & Philp 1998; Leeman 2003; McDonough & Mackey 2006; McDonough 2007), leading Mackey & Philp (1998) to propose that repetitions of recasts 'may be red herrings' (p. 338).

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At least three laboratory studies that controlled for immediate repair following different CF types suggest that its effects on L2 development vary according to CF type. First, Leeman (2003) compared recasts with a CF move referred to as negative evidence that contained a repetition of the error preceded by 'but you said. . .' but without opportunities for immediate repair in either condition. Although there were no statistically significant differences between the recast and negative evidence groups, the recast group outperformed the control group while the negative evidence group did not. Second, McDonough (2007) investigated the effects of recasts and clarification requests, both of which included opportunities for immediate repair, and found no significant differences overall between recasts and clarification requests, although both CF types were more effective than no CF. Third, Lyster & Izquierdo (2009) compared recasts and clarification requests (followed by a repetition if necessary), including opportunities for immediate repair after the prompts but not after recasts, and found both CF types to be equally effective. Together, these results suggest that, in dyadic interaction with a researcher, learners are likely to benefit equally from different CF types provided intensively and repeatedly on the same target feature, provided learners are given opportunities for immediate repair after prompts, but not necessarily after recasts. This is because, in contexts of dyadic interaction, learners receiving recasts benefit from repeated exposure to positive exemplars as well as from opportunities to infer negative evidence, whereas learners receiving prompts benefit from repeated exposure to negative evidence as well as from opportunities to practise using the target form as they modify their output. In dyadic interaction, therefore, positive learning outcomes are associated with self-repair following prompts but not necessarily with learner repetition following recasts, whose variable effectiveness may instead be associated with specific input features such as length and prosody.

5.2 New vs. partially acquired knowledge

A second contentious issue is whether CF is intended to activate the acquisition of completely new knowledge or to consolidate partially acquired knowledge. With respect to CF, Long (2007: 102) claimed that 'acquisition of new knowledge is the major goal, not "automatizing" the retrieval of existing knowledge' (see also Goo & Mackey 2013). However, the ultimate goal of instruction is not to continuously present only new knowledge to students, without providing enough subsequent opportunities for assimilation and consolidation of that knowledge. In school-based learning, students need repeated opportunities to retrieve and restructure their knowledge of the target language. This is because students may have target language knowledge that continues to be accessible for comprehension but that requires further activation before becoming readily available for accurate production. CF can be used to revisit target items and grammatical subsystems in ways that encourage the gradual development of a network of associations that become increasingly accessible for learners during communicative interaction.

Proponents of the CF-for-new-knowledge position claim that recasts are effective because they target forms as yet unknown to learners (Goo & Mackey 2013). It remains unclear, however, how a recast can be provided on a form about which the learner has zero knowledge; if the student produced the form, albeit erroneously, then some knowledge exists. Moreover,

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research tends to show that learners with developing knowledge of target forms in fact benefit more from recasts than do learners at lower stages of development. For example, Mackey & Philp (1998) found that adult ESL learners at stage 3 in their use of English question forms made better use of recasts than did learners at stage 2. Accordingly, Nicholas et al. (2001) argued that 'recasts can be effective if the learner has already begun to use a particular linguistic feature and is in a position to choose between linguistic alternatives' (p. 752). Similarly, recasts provided in Ammar & Spada's (2006) study were more effective for learners who had pretest scores above 50% than for learners with pretest scores below 50%. This contrasts sharply with the view that the purpose of CF is to initiate the development of new knowledge and that recasts, in particular, serve to enhance the acquisition processes of new knowledge (Long 2007). Hattie & Timperley (2007) make the compelling argument that 'feedback has its greatest effect when a learner expects a response to be correct and it turns out to be wrong. [. . .] Conversely, if response certainty is low and the response turns out to be wrong, feedback is largely ignored' (p. 95). This suggests that, even if it were feasible to provide CF following erroneous forms about which learners have no prior knowledge, such feedback (i.e. CF requiring the integration of completely new information) would not be as effective as feedback triggering associations between existing knowledge structures.

5.3 CF with or without instruction

A third contentious issue is whether research should examine CF only in isolation or also in conjunction with instruction (see Nassaji 2009; Ellis 2012; Goo & Mackey 2013). Although theoretical justifications abound for isolating the effects of CF from instruction, CF and instruction may be best seen as complementary in pedagogical terms. In support of feedback provided in tandem with instruction, Hattie & Timperley (2007) argued that 'feedback and instruction are intertwined in ways that transform the process into new instruction rather than informing the learner only about correctness' (p. 82).

Many classroom studies investigating the effects of CF have done so in conjunction with instruction that served to create meaningful contexts of interaction, which enabled teachers to provide CF intensively on the target features. Some of these studies were designed to tease apart the effects of CF and those of other instructional activities, whose inclusion was based on the premise that 'feedback can only build on something; it is of little use when there is no initial learning or surface information' (Hattie & Timperley 2007: 104). For example, in the classroom studies by Ammar & Spada (2006), Lyster (2004), Saito & Lyster (2012a), and Yang & Lyster (2010), the CF and no-CF groups alike were all exposed to the same instructional activities, which included focused production tasks that provided practice opportunities in all groups and contexts for CF provision in the treatment groups. In addition, some studies used typographical enhancement (Saito & Lyster 2012a) as well as consciousness-raising tasks embedded in the students' regular curriculum (Lyster 2004). Engaging all groups in these tasks helped to level the playing field for comparisons between CF and no-CF groups and also to ensure that those receiving CF were at a similar level in their knowledge of the target feature. As Li (2010) explained, with all groups receiving the same instruction but different CF treatments, any effects observed in the between-group comparisons must be due to the

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CF treatments. In contrast, the results of CF studies may be less robust when the control groups do not participate in equivalent instructional activities. For example, in the studies by Ellis et al. (2006) and Sheen (2007), the CF groups participated in focused tasks that were designed to encourage the use of target forms during story retelling. These narrative-retelling tasks provided the context for CF. However, the control groups did not participate in the same tasks and thus missed the exposure to positive exemplars of the target forms in the original narratives and also in their classmates' retelling of the stories, as well as in the oral interaction with their peers as they planned their retelling.

Related to the question of whether CF is best delivered in isolation or in tandem with instruction is the issue of providing intensive CF (a pre-planned focus on a single form) versus extensive CF (an incidental focus on a range of linguistic forms) (Ellis 2001). Whereas Ellis & Sheen (2006) suggested that 'extensive recasts directed at whatever errors learners happen to make might be of greater practical value' (p. 597), Doughty (2001) argued that 'recasting is most likely to be effective when it is targeted at only one or a few features' (p. 255). Similarly, Lightbown (2008a) argued that if students constantly receive diffuse CF they might develop the expectation that the teacher will always provide a corrected version and thus either cease to notice the CF or lose their motivation for self-monitoring and effortful generation of the target language. Arguing in favour of actually reducing the amount of CF in classrooms, Lightbown (2008a) stated that 'When feedback is focused on a limited number of objects or available in some classroom activities but not others, learners can take greater responsibility for creating and monitoring their own output' (p. 41). Noteworthy in this regard, however, is that the meta-analysis by Russell & Spada (2006) found no significant differences between intensive and extensive treatments, whereas Mackey & Goo (2007) found no differences at the time of immediate posttests but significantly larger effects for intensive treatments on delayed posttests.

6. CF effectiveness

Our discussion of CF effectiveness begins with a brief synopsis of laboratory studies before moving on to a more thorough discussion of classroom research.

6.1 Laboratory studies

For the most part, research demonstrating the effectiveness of recasts has been conducted in laboratory settings, where variables can more easily be controlled than in classroom settings and CF can be delivered intensively in consistent ways on specific linguistic targets. These laboratory studies have shown positive effects for recasts on L2 development (e.g. Long, Inagaki & Ortega 1998; Mackey & Philp 1998; Han 2002; Iwashita 2003; Leeman 2003; Ishida 2004; McDonough & Mackey 2006) and are often invoked in reviews to support the effectiveness of recasts (see Long 2007; Mackey & Goo 2007; Gass 2010; Goo & Mackey 2013).

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Some laboratory studies invoked in support of recast effectiveness, however, are not about oral recasts but rather about written reformulations presented on a computer screen (e.g. Ayoun 2001; Sachs & Suh 2007), while in others, recast groups were compared to control groups receiving no CF (Han 2002; McDonough & Mackey 2006; Sagarra 2007); in Ishida's (2004) study, there was no control at all, because a time-series design was used to track the progress of participants receiving recasts. In the study by Long et al. (1998), recasts were not compared with other types of CF, but rather with models: positive exemplars provided to learners before they speak. They found short-term benefits for recasts over models among learners of Spanish on adverb placement (but not object topicalization) and among learners of Japanese on required adjective ordering and a preferred locative construction. Iwashita (2003) also compared the effects of different interactional moves containing either positive evidence (models) or negative evidence (recasts) on two locative-initial constructions (word order and particle use) and *te*-form verbs in Japanese. She found positive effects for recasts on *te*-form verbs but not for the locative-initial constructions, which benefited more from positive evidence.

Mackey & Philp (1998) conducted a laboratory experiment with adult learners of ESL to compare the effects of interaction with and without recasts on the production and development of question forms. Each participant performed three information-gap tasks with a native-speaker researcher who either recast intensively or withheld recasts and instead used 'negotiation'. However, Mackey & Philp acknowledged an overlap in these CF types, because recasts, in some cases, 'are part of negotiation sequences and function as confirmation checks' (p. 342; see also Oliver 2000; Loewen & Philp 2006; Sheen & Ellis 2011). Nevertheless, Mackey & Philp found that interaction with intensive recasts was more effective than interaction with fewer recasts, but only for advanced learners.

In a Japanese EFL context, Loewen & Nabei (2007) conducted a laboratory study involving a researcher who interacted with small groups of four learners in order to simulate meaning-focused activities in classroom settings. They compared the effects of recasts, clarification requests, and metalinguistic feedback provided during meaning-focused tasks on English question formation. All CF groups significantly outperformed a control group, but no significant differences were found across the different CF treatments. Also with small groups of learners, Erlam & Loewen (2010) conducted a comparative study of implicit and explicit recasts provided in the context of interactive tasks targeting gender agreement in French. Implicit recasts entailed a single recast with rising intonation, while explicit recasts included a repetition of the error with rising intonation followed by a recast with declarative intonation. No differences were found across CF types.

Other laboratory studies focusing on the noticeability of recasts have used stimulated-recall methods to probe learners' perceptions of CF and hence the extent to which CF engages learners in a cognitive comparison (Ellis 1994) or in 'focused input analysis' (Ellis 2005: 328; for theoretical discussion of noticing and L2 development, see Schmidt 1990, 1995; Tomlin & Villa 1994; Robinson 1995, 2003; VanPatten 1996; Skehan 1998; Doughty 2001; Gass 2004). Mackey et al. (2000), for instance, after videotaping interactions between L2 learners and native speakers, asked learners as they watched the video clips to comment on their perceptions about the CF they received. In addition to finding that the accuracy of their perceptions depended on the linguistic nature of the targets (morphosyntactic errors being

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the least accurately perceived), Mackey et al. (2000) found that recasts were not perceived as corrections to the extent that the CF provider had intended. Similarly, in Carpenter et al.'s (2006) experiment, learners viewing videotaped segments of a researcher responding to a learner with a mixture of recasts and non-corrective repetition were more likely to identify recasts as non-corrective repetition than as recasts – whether or not they actually heard the learner's preceding utterance (see also Egi 2007, 2010; Nassaji 2009).

Yet another important strand of laboratory-based research has revealed the role played by individual differences in determining recast effectiveness. For example, the positive effects for recasts are reserved for learners with high literacy levels (Bigelow et al. 2006), developmental readiness (Mackey & Philp 1998), high working memory capacity (Mackey et al. 2002), as well as high phonological memory, attention control, and analytic ability (Trofimovich, Ammar & Gatbonton 2007).

Several reviews of recast studies are available that put recast effectiveness into perspective through reference to a range of linguistic, pragmatic, cognitive, and contextual constraints (e.g. Nicholas et al. 2001; Ellis & Sheen 2006; Sato 2011). One review that stands out for its optimism is by Long (2007), in which research failing to find unequivocal support for recast effectiveness is ascribed to 'sceptics' (p. 94) whose 'doubt' is a 'challenge to the optimism about recasts' (p. 104). However, as Spada & Lightbown (2009: 165) pointed out:

> In his review of research on recasts, the only classroom studies Long (2007) refers to are either descriptive . . . and/or compare the effects of recasts to no corrective feedback. . .. He does not include any reference to recent quasi-experimental research in L2 classrooms that compares the effects of recasts with other types of corrective feedback.

We turn next to classroom-based research that ranges from studies of learners' perceptions to intervention studies comparing different types of CF.

6.2 Classroom studies

Before addressing CF intervention studies, we mention two studies that examined learners' perceptions of CF in classroom settings. The first is Mackey et al.'s (2007) study in which L2 learners of Arabic ($n = 11$) and their two teachers watched videotaped CF episodes from their own classroom interactions. Findings revealed that, overall, only 36% of the CF was perceived in the way that teachers had intended (e.g. instances where CF targeted a morphosyntactic error were accurately understood by the learners as morphosyntactic CF). Explicit CF (either containing metalinguistic information or clearly eliciting self-repair) was more accurately perceived than implicit CF (recasts and negotiations for meaning). With regard to recasts, interrogative recasts were more accurately perceived than declarative recasts. The other is Mackey's (2006) study, which stands out as one of the few classroom investigations of how learners' reports of noticing CF may be related to L2 development (i.e. question forms, plurals, and past tense). Noticing data were collected by means of stimulated recalls, learning journals, a questionnaire, and focused questions in the learners' L1. Statistical analyses partially supported the relationship between noticing and L2 development: learners'

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self-reports of noticing were significantly related to L2 development only for question forms. This result indicates that learners reported noticing which in the end was not associated with L2 development and also that CF contributed to the learning of forms on which learners had not reported receiving CF. Thus, while many researchers argue that noticing accounts for CF efficacy, it is difficult to claim that 'learning follows noticing, or is dependent on noticing' (Mackey 2006: 423; see also Mackey et al. 2002; Kim & Han 2007; Yoshida 2008b, 2010). To reveal the mechanisms of how and why CF impacts L2 development, further research on learners' perceptions is warranted to examine the nature of noticing (e.g. levels of noticing: see Svalberg 2007) and its measurement (Ammar & Sato 2010), as well as the causal relationship between noticing CF and L2 development.

At least two classroom intervention studies (Doughty & Varela 1998; Saito & Lyster 2012a) compared the effects of instructional activities with and without CF, and both found the effects to be greater with CF than without. In one of the first classroom studies to control for the provision of CF and to demonstrate its effectiveness, Doughty & Varela (1998) examined the effects of what they called 'corrective recasts' (a repetition of the error followed by a recast if necessary) in two content-based ESL classrooms. A group of 11–14-year-old students conducted a set of experiments in accordance with their regular science curriculum. The class receiving CF during the reporting phase showed significant short- and long-term improvement in comparison to a class engaged in the same production tasks but without CF. Doughty & Varela's study did not directly examine the effects of recasts, because recasts were used solely as secondary moves in the event that the primary move – a prompt that repeated verbatim the learner's error – failed to elicit self-repair. Students appeared especially to benefit from the teacher's repetition of their non-target utterances, as evidenced by the observation that, by the beginning of the second of three treatment sessions, 'students were beginning to self-correct before the teacher had the opportunity to recast' (p. 135). The science tasks creating obligatory contexts for the use of the target forms in this study provide excellent models of exemplary production tasks congruent with content area curricular objectives. However, the teacher's use of a double-feedback move was arguably much more explicit than the researchers' characterization of corrective recasts as an 'implicit focus on form' (p. 118).

Saito & Lyster (2012a) investigated the pedagogical value of recasts on the acquisition of /ɹ/ by adult Japanese learners of English. Students in the experimental groups engaged in tasks designed to develop argumentative skills in English while drawing attention to the target form through typographically enhanced input and providing opportunities for production practice. At the same time, teachers provided CF only to those in the CF group by recasting their mispronunciation and unclear pronunciation of /ɹ/. According to the results of the listener judgment and acoustic analyses, only those who received recasts during the tasks demonstrated gains, not only at a controlled-speech level (measured via word and sentence reading) but also at a spontaneous-speech level (measured via a timed picture-description task) (see also Saito & Lyster 2012b for the effects of recasts on the acquisition of L2 vowels). In a subsequent study, Saito (in press) found that providing explicit phonetic information (i.e. exposing students to teachers' exaggerated model pronunciation of /ɹ/) before the form-focused tasks significantly enhanced the generalizability and magnitude of recast effectiveness. That is, students who received both recasts and explicit information demonstrated considerable improvement with large effects (changing from use of hybrid

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exemplars to good exemplars of /ɪ/), not only for familiar lexical items that appeared during instruction but also for unfamiliar lexical items.

Quasi-experimental classroom studies comparing different types of CF have shown overall positive effects for CF as well as some advantages for prompts and explicit correction over recasts. For example, with young learners, Ammar & Spada (2006) investigated the effects of recasts and prompts on the acquisition of possessive determiners by French-speaking ESL learners. While both groups receiving CF showed superior performance compared to the control group, the group receiving prompts significantly outperformed the recast group on written and oral posttests. Noteworthy in their study, as previously mentioned, was the finding that learners initially demonstrating more accurate use of possessive determiners benefited from both types of CF, while those initially demonstrating less accurate use benefited from prompts but not from recasts.

Also with young learners, Lyster (2004) investigated the effects of form-focused instruction and CF on French immersion students' acquisition of grammatical gender. He found that instruction with prompts led to significantly higher results than instruction with recasts in written production but not in oral production. He attributed the lack of significant differences in oral production measures to a large task effect: the subsample of students participating in the oral production measures benefited greatly from the opportunities to interact one-on-one with a near-native speaker of French who provided them with valuable oral practice to an extent that was impossible to match in class. Overall, of the eight posttest measures, the comparison group was significantly outperformed by the prompt group on all eight measures, by the recast group on five, and the no-CF group on four.

In a partial replication of Lyster's (2004) study, Algarawi (2010) found that all students receiving CF showed significant improvement in their use of passive forms in written production, regardless of CF types (there were no measures of oral production). Conducted in a very different instructional setting from the French immersion context of Lyster's study, Algarawi's study involved adult EFL students in form-oriented courses of English for Academic Purposes (EAP) at a university in Saudi Arabia. In EFL classrooms in China, Yang & Lyster (2010) compared the differential effects of recasts, prompts, and no CF on the use of regular and irregular past tense forms by undergraduate English majors. The effects of prompts were larger than those of recasts for increasing accuracy in the use of regular past-tense forms, while prompts and recasts had similar effects on improving accuracy in the use of irregular past-tense forms.

With adult ESL learners, Ellis et al. (2006) investigated the differential effects of recasts and metalinguistic feedback (i.e. a repetition of the error followed by metalinguistic information: 'Kiss – you need past tense' 2006: 353) on the acquisition of regular past tense in English (see also Ellis 2007). The main purpose of their study was to examine whether learners with a great deal of explicit knowledge could develop more implicit knowledge (measured via timed oral imitation task) as a result of two different types of CF treatment. The metalinguistic feedback was more effective overall than recasts and the effect was found more in the delayed posttest than the immediate posttest. Also with adult ESL learners, Sheen (2007) compared the effects of recasts and metalinguistic corrections on the use of English articles. Metalinguistic corrections included provision of the correct form followed by metalinguistic explanation (e.g. 'You should use the definite article *the* because you've

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already mentioned *fox*'). The metalinguistic group significantly outperformed both the recast and control groups, and its positive gain scores were correlated with both language analytic ability and attitudes towards CF. In contrast, the recast group did not significantly outperform the control group and its gain scores were related neither to language analytic ability nor to attitudes towards CF. In a related study with a subsample of these participants, Sheen (2008) investigated the effects of language anxiety on recast effectiveness, confirming that low-anxiety learners receiving recasts significantly outperformed not only high-anxiety learners receiving recasts but also low-anxiety learners receiving no recasts in a control group. No significant differences emerged between the high-anxiety recast group and the control groups.

To summarize, experimental classroom studies of CF consistently confirm that oral CF is significantly more effective than no CF and also reveal a tendency for learners receiving prompts or explicit correction to demonstrate more gains on some measures than learners receiving recasts (for similar summaries, see Sheen 2011; Ellis 2012). Specifically in terms of significant differences, repetitions of learner errors followed by recasts if necessary were more effective than no CF (Doughty & Varela 1998), and recasts were more effective than no CF for improving pronunciation of familiar, but not unfamiliar, items (Saito & Lyster 2012a). Recasts were as effective as prompts for young ESL learners with high pretest scores but less effective than prompts for learners with low pretest scores (Ammar & Spada 2006). In the case of young immersion students, recasts were less effective than prompts in written production measures but equally effective in oral production measures (Lyster 2004). With adult learners in EAP courses, no significant differences between CF types were apparent in the accuracy of passive forms used in written production (Algarawi 2010). Adult EFL students in China benefitted more from prompts than recasts in improving their accurate use of regular past-tense forms but benefitted equally from both CF types in improving accuracy of irregular forms (Yang & Lyster 2010). With adult ESL learners, metalinguistic feedback proved more effective than recasts (Ellis et al. 2006; Ellis 2007) and explicit corrections with metalinguistic explanations were also more effective than recasts (Sheen 2007).

With respect to the relative benefits of recasts and prompts, Lyster & Saito (2010) interpreted the similar findings yielded by their meta-analysis of 15 classroom studies of oral CF to mean that classroom learners are able to benefit from the positive evidence available in recasts as well as from the opportunities recasts provide to infer negative evidence, but may benefit even more from the negative evidence available in prompts and from the greater demand they impose for producing modified output. With respect to the benefits of explicit CF, Ortega (2009: 75) stated that 'when two or more implementations of negative feedback are compared, the more explicit one leads to larger gains' and went on to say that this finding 'is hardly illuminating' because it mirrors the findings of the meta-analysis by Norris & Ortega (2000) concerning the superiority of explicit instructional treatments over more implicit ones (see also Spada & Tomita 2010). Ellis (2012) cautioned, however, that the reasons that one type of CF leads to more gains than another are difficult to interpret: 'These strategies are not as "pure" as they are sometime presented in the literature. Recasts, in particular, occur in many different forms. Prompts are a mixture of implicit and explicit strategies' (p. 263). Therefore, if we take the Ellis et al. (2006) study as an example, it is difficult to tease apart whether participants benefitted from (a) the teacher's repetition of the error 'Kiss', (b) the

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metalinguistic information conveyed by 'you need past tense', (c) the opportunity to self-repair, or (d) all of the above.

In the case of prompts, because they include more than one way of providing negative evidence while withholding positive evidence, it may be their variety that adds to their effectiveness. The variety in prompts has led to the criticism that comparing recasts with prompts is like comparing one variable with multiple variables (Goo & Mackey 2013). It is important to note, however, that the use of prompts by teachers in comparative studies of recasts and prompts has not entailed MORE INSTANCES of CF in the prompt condition, just MORE VARIETY. Although prompts have multiple manifestations, which may indeed contribute to their effectiveness, they might be considered a single strategy insofar as they withhold correct reformulations. Similarly, recasts might be considered a single strategy (i.e., CF that provides correct reformulations) but with multiple manifestations. As Mackey & Goo (2007) suggested, the term 'recast' 'is increasingly recognized as being elastic in nature', although they considered it, as many researchers do, 'as a monolithic construct' (p. 413). To point out just a few examples of such elasticity, other researchers have considered recasts as: conversational or didactic (Sheen & Ellis 2011), implicit or explicit (Erlam & Loewen 2010), and interrogative or declarative (Loewen & Philp 2006).

That instructional interventions with variety may be more effective than interventions with less variety is in line with studies demonstrating superior effects for explicit over implicit treatments. That is, whereas implicit instruction is typically operationalized in a relatively restricted way that may simply involve exposure to the target structure, explicit instruction often involves a combination of several instructional strategies that may include rule presentation, focused practice, corrective feedback, and repetition of the rule (Norris & Ortega 2000). As Lightbown (2008a) pointed out, variety in instructional practices not only stimulates interest but may also 'increase both the depth and the transferability of learning' (p. 40).

Because a variety of CF types is probably more effective than consistent use of only one type, it may not be necessary or even possible for researchers to identify the single most effective CF strategy. Moreover, CF types are not the only variable affecting CF effectiveness, as shown by the different levels of noticeability yielded by different studies; that is, learner factors such as instructional contexts, proficiency levels, metalinguistic knowledge, and age are all variables that influence 'the ultimate effectiveness of CF' (Sato 2011: 7). The next sections specifically address the influence of linguistic targets and age. Given the exploratory nature of these topics, we aim at the same time to suggest directions for future CF research.

7. Linguistic targets

Research has shown that teachers and interlocutors tend to provide more CF on morphosyntactic than on other types of errors (e.g. Lyster 1998b; Mackey et al. 2000; Carpenter et al. 2006; Kim & Han 2007). These same studies, however, have also shown that learners generate more successful repair and accurate perceptions of CF on lexical and phonological errors, revealing a mismatch between the types of errors that receive

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CF and those that learners end up noticing and/or repairing. To the extent that noticing and/or successful repair may contribute to L2 development, this research suggests that CF might be more facilitative of lexical and pronunciation development than of morphosyntactic development.

Mackey et al. (2000) speculated that learners' apparent sensitivity to CF targeting lexical and phonological errors might be due to the fact that, compared to morphosyntactic errors, inappropriate lexical choices and inaccurate pronunciation have 'more potential to seriously interfere with understanding' (p. 493). In this regard, Isaacs & Trofimovich (2012) found that lexical and phonological errors directly inhibited native speakers' perceived comprehensibility of the extemporaneous speech of L2 learners, regardless of proficiency levels, whereas inaccurate grammar and discourse ambiguity had a negative influence on comprehensibility only in the case of advanced L2 learners with good pronunciation and lexical skills. In sum, lexical and phonological aspects of L2 speech are relatively important for successful L2 communication and, for this reason, may be particularly amenable to CF. To date, however, very few empirical studies have actually tested the acquisitional value of CF in such domains.

7.1 Grammatical targets

Whether conducted in laboratories or classrooms, CF research has focused to a great extent on grammatical targets, reflecting the preoccupation with grammatical development in the study of SLA. Some examples of grammatical features from the aforementioned studies include questions, passive forms, past tense, articles, and possessive determiners in English; gender attribution and noun-adjective agreement in French; adverb placement, object topicalization, and gender agreement in Spanish; aspectual forms, adjective ordering, and locative constructions in Japanese. However, the effects of CF differed widely depending on the linguistic target; as Sheen (2011) observed, 'we cannot assume that because CF has been shown to assist the acquisition of one grammatical feature it will necessarily do so for all features' (p. 165).

Two of the aforementioned classroom studies were designed to examine the differential effects of CF types on different kinds of grammatical targets. The first was conducted with ESL learners in New Zealand by Ellis (2007), comparing the variable effects of recasts and metalinguistic explanations on regular past tense *–ed* and comparative *–er*. Ellis hypothesized that these features differed in terms of grammatical difficulty. Comparative *–er* was considered more difficult than past *–ed*, because it involves both morphology and syntax, occurs less frequently, emerges after *–ed* in terms of learnability, and the rule to be learned explicitly is more complex. The group receiving metalinguistic explanations showed greater improvement on *–er* than *–ed*, while the recast group did not show any significant gains over the control group on any of the measures. Ellis attributed the ineffectiveness of recasts to their lack of saliency due to the shortness of the one-hour treatment and also to the shortness of the recasts themselves. In contrast, the metalinguistic feedback was deemed sufficiently salient in spite of the short treatment and especially effective for comparative *–er* simply because, according to the pretest scores, learners initially demonstrated well-developed explicit knowledge of

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past *–ed* but not of comparative *–er*, so had more room for improvement in their use of the comparative.

The second was Yang & Lyster's (2010) study of the effects of recasts, prompts, and no CF on past-tense forms. Due to the predictable and rule-based nature of regular past-tense verbs on the one hand, and the complex and unpredictable yet highly salient nature of irregular past-tense verbs on the other (DeKeyser 1998; Ellis 2005), the authors predicted that representational and acquisitional processes would vary between regular and irregular forms. All learners participated in a set of focused production tasks that elicited the target forms and provided contexts for the provision of CF in the recast and prompt groups. Regular past-tense forms proved more amenable to prompts than to recasts, arguably because of the negative evidence afforded by prompts but not by recasts incorporating a nonsalient morpheme (recast of 'shop' is 'shopped'). Learners who may not notice the additional morpheme in recasts of regular forms yet have plenty of explicit knowledge are able to benefit from the negative evidence in prompts and also from the opportunity to self-repair. In contrast, recasts of irregular past-tense forms entail a revised intact syllable associated with high saliency (recast of 'buy' is 'bought'). Given their greater noticeability, irregular forms were found to be amenable to both recasts and prompts, again because of the negative evidence afforded by prompts and also by recasts incorporating salient positive exemplars.

7.2 Lexical targets

With respect to interaction in general, Mackey & Goo's (2007) meta-analysis demonstrated that its effects were significantly larger for lexical than for grammatical development. Specifically with respect to CF provided on either lexical or grammatical errors, Egi (2007) provided some evidence that learners process recasts of morphosyntactic and lexical errors differently. In her study, learners of Japanese as a foreign language received recasts during dyadic communicative tasks with native speakers. Using stimulated-recall measures and tailor-made posttests to investigate which components of recasts (i.e., positive or negative evidence) benefit learners' morphosyntactic and lexical development, she found that the noticing of positive evidence in recasts was more likely to result in immediate interlanguage changes in vocabulary than in morphosyntax.

In Ellis & He's (1999) study, after receiving explicit instruction on ten unknown words, adult ESL students were paired and asked to complete a collaborative problem-solving activity requiring them to use the new lexical items in interaction with their partner. To successfully complete the task, the learners provided and received clarification requests if anything was unclear. The results showed that they demonstrated significant improvement in receptive and productive use of new lexical items, especially compared to those who simply received pre-modified input (i.e., listening to task directions read by their teachers at a slow speech rate without any interaction opportunities) (for similar results, see de la Fuente 2002).

Dilans (2010) teased apart CF as an independent variable and tested the relative effects of different CF types on the acquisition of ten unknown words by adult ESL students. After receiving explicit instruction on the items, the students completed a written production task (i.e., sentence creation) and an oral production task (i.e., picture labelling). During these two

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tasks, teachers provided either recasts or prompts in response to ungrammatical usage and mispronunciation of these words. The attention given to both grammar and pronunciation in the context of lexical development is in line with Webb's (2005) call for focusing on 'multiple aspects of L2 lexical knowledge' (p. 35) and with other L2 vocabulary researchers, according to whom knowing a word requires the acquisition not only of form and meaning but also of orthography, phonology, syntax, and the grammatical function of the item (see Schmitt 2008). Both the recast and prompt groups improved equally in partial-precise and receptive-productive vocabulary knowledge, but only the prompt group demonstrated gains in depth of vocabulary knowledge (i.e., increasing awareness of syntactic and pragmatic associations with the target words). In line with previous findings in the L2 morphosyntax literature, Dilans attributed the relative effectiveness of prompts to the role of pushed output, a point that has also been raised from a cognitive psychology perspective with respect to lexical acquisition. Given that acquiring new words and then retaining them within one's long-term memory requires repetition of the words at increasing intervals over a long period of time, these repetition sequences can be even more effective when learners are pushed through prompts to recall the words instead of being presented with them in recasts (i.e., retrieval practice effects: Hulstijn 2001; Nakata 2008).

To further examine how providing various types of CF through interaction can promote L2 vocabulary development, we call for future research that interfaces the existing CF research paradigm with L2 vocabulary research in an interdisciplinary manner. One direction for future research of this kind is the integration of psycholinguistic methodologies to measure the impact of instruction on L2 vocabulary development. For example, Elgort (2011) employed priming techniques to examine the impact of list-learning on both representational and functional aspects of L2 lexical knowledge, providing a useful framework for future CF studies to measure the effects of more meaningful interventions (e.g. communicative input and output activities followed by CF) on enhancing automaticity in L2 vocabulary development (for discussion, see Hulstijn 2001).

7.3 Phonological targets

With respect to CF in L2 phonology some studies, as reported earlier, have examined how instruction with and without recasts can facilitate L2 speech learning processes (Saito & Lyster 2012a, 2012b; Saito in press). Though few in number, these studies suggest that short pronunciation-focused recasts can play an important role in L2 pronunciation development, arguably because students benefit from the opportunities afforded by such recasts, first, to notice the negative evidence directed at the intelligibility of their output and, second, to practise the correct form in response to their teachers' model pronunciation (positive evidence). Together, however, these studies also showed that provision of explicit information might be necessary for pronunciation-focused recasts to lead to larger and more generalizable changes in relatively difficult cases of L2 speech learning (e.g. the acquisition of /ɹ/ by Japanese learners of English). Explicit information enables students to attend to the phonetic unit of L2 input, and thus make the best of subsequent recasts that embed the target sound at a lexical level.

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More research of this kind is needed to examine further how teachers can use CF techniques to promote various areas of L2 phonological development, such as suprasegmentals (speech rate, intonation, rhythm) and syllable structure. Another under-studied but pedagogically crucial aspect in measuring phonological CF effectiveness includes the development of global listening skills (Vandergrift 2007). A majority of L2 listening research has focused on the importance of increasing learners' awareness of metacognitive strategies via a range of pre-listening activities in a proactive manner (Vandergrift et al. 2006). Recently, this line of research has begun to reveal that L2 vocabulary size is a relatively strong predictor of global L2 skills (Stæhr 2009). This in turn suggests the pedagogical potential of L2 listening instruction that reinforces bottom-up processing in order to help learners build robust phonological representations of L2 words and sounds (Field 2008). Such pedagogical techniques include slow speech rate (Zhao 1997), repetition of oral texts (Jensen & Vinther 2003), and attending to prosodic features (Harley 2000). Future research could examine whether and to what degree providing CF in tandem with instruction emphasizing bottom-up processing can promote learners' knowledge of vocabulary items and ultimately enhance their global listening skills.

7.4 Pragmatic targets

A general consensus has been reached in the area of interlanguage pragmatics according to which explicit instruction is more facilitative than implicit instruction for improving learners' use of difficult pragmatic structures that include speech acts such as refusals, invitations, requests, offers, suggestions, agreements, complaints, and apologies (see Jeon & Kaya 2006 for a meta-analysis; Kasper & Rose 2002 for a narrative review). Recently, some attempts have been made to investigate how teachers can use a range of CF techniques during form-focused activities to foster learners' emerging L2 pragmatic knowledge.

Takimoto (2006) compared the effects of structured input tasks with and without explicit CF on the ability of adult Japanese learners of English to mitigate requests. All participants engaged in structured input tasks requiring them to rate the appropriateness of dialogues in different situations; participants in the CF group also received explicit CF that involved 'either a metalinguistic question to elicit a correct response or provision of a metalinguistic rule' (p. 411–412). Both groups made significant progress in the receptive and production tasks, although the CF group had slightly higher scores than the no-CF group on all measures. Again targeting requests, but with university-level English-speaking learners of Spanish, Koike & Pearson (2005) investigated the differential effects of explicit CF (i.e., correct response along with metalinguistic information) and implicit CF (i.e., clarification requests). Their study also examined the extent to which explicit instruction before input enhancement activities influences CF effectiveness. Learners who received both explicit instruction and CF showed distinguishable improvement in receptive measures (multiple choice tasks), while those who received clarification requests without explicit instruction outperformed the other groups in production measures (dialogue tasks). In their study of the appropriate use of refusals by university-level EFL learners in Thailand, Nipaspong & Chinokul (2010) compared the effects of explicit CF (i.e., metalinguistic clues followed by the right answer) and prompts (i.e., elicitation, repetition, metalinguistic clues). Unlike the aforementioned studies, both of which

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implemented brief treatments ranging from only 40 to 60 minutes, Nipaspong & Chinokul employed a longitudinal quasi-experimental design involving ample instruction and practice over a semester (15 hours). The results of the quantitative data (multiple-choice tests) and qualitative data (think-aloud analyses) showed that learners in the prompt group improved their pragmatic awareness of the target feature more than those in the explicit CF group.

Taken together, these findings confirm that focused instructional tasks benefit learners' L2 pragmatic development and suggest that different types of CF contribute differentially to this development. More research is necessary, however, to obtain a better understanding of the relationship between CF and L2 pragmatic knowledge. Useful research in this area would include detailed descriptions of the nature and operationalization of the CF treatments along with theoretical support (see Nguyen, Pham & Pham 2012 for their detailed discussion of various form-focused options in the context of L2 pragmatics teaching). Also useful would be explorations of how factors such as learners' perceptions and responses to CF interact to mediate its effects specifically on L2 pragmatic development. We call for further research to examine the impact of CF on L2 pragmatics according to various independent variables such as different types of CF (as in Nipaspong & Chinokul 2010), various task conditions (e.g. deductive vs. inductive tasks: Takimoto 2008), various output measures (e.g. controlled vs. free constructed responses: Nguyen et al. 2012), and speech acts with different levels of frequency and saliency in the input (Bardovi-Harlig & Dörnyei 1998).

8. Learners' age

In naturalistic settings, it has been widely accepted that the age at which exposure to the L2 begins is a strong predictor of the extent to which the learner ultimately attains native-like proficiency. The assertion that 'younger is better' reigns supreme in the domain of L2 phonology (Flege, Munro & MacKay 1995) and morphosyntax (Abrahamsson & Hyltenstam 2008). In classroom SLA, however, with respect to the rate of learning in the initial stages, previous studies have shown that child learners actually tend to demonstrate slower and fewer gains than adolescent and adult learners from the same amount of L2 instruction (for a review, see Marinova-Todd, Marshall & Snow 2000). Child learners lag behind adolescent and adult learners with respect to cognitive maturity (e.g. logical and deductive reasoning, memory and processing capacities), literacy knowledge (e.g. L1 vocabulary size, phonological and morphological awareness), and experience at school (e.g. familiarity with learning L2 under minimal input conditions) (García Mayo & García Lecumberri 2003; Muñoz 2006). As a result, many researchers have emphasized the need for elaborated intervention, including teacher scaffolding, for young learners who would otherwise have difficulty in detecting and analysing linguistic features in classroom input on their own (Lightbown 2008b; Muñoz 2008).

Seemingly at odds with this disadvantage for younger learners is Mackey & Oliver's (2002) conclusion that CF 'leads to development more quickly for child learners than for adults' (p. 473). Their observation was based on an intervention study with a pre- and posttest design in which child ESL learners received information gap tasks in teacher–student dyads. When using the target feature (English question forms) incorrectly, those in the experimental

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group received recasts from adult native speakers, while the control group received no CF. They found that recasts positively influenced child learners' development of English question forms even at the immediate posttest session, whereas Mackey & Philp (1998) had found in a preceding study only delayed effects for adult participants.

Lyster & Saito's (2010) meta-analysis of classroom CF studies included a meta-regression analysis with different age groups in order to examine how learners' age as an independent variable mediates CF effectiveness. Like Mackey & Oliver's (2002) study, their analysis revealed larger CF gains for younger learners than for older learners. Moreover, although they acknowledged the small sample sizes in the statistical analysis, the results revealed that significant age effects were apparent in prompts but not in recasts: that is, more in line with research suggesting some advantages for older over younger learners in school-based settings, older learners benefitted to a similar extent from recasts and prompts, while younger learners benefitted more from prompts than from recasts. Thus, while younger learners may be generally sensitive to the effects of CF (Oliver 2000), they may be even more susceptible to the impact of pedagogically enhanced CF, owing to the difficulty they might otherwise have in detecting linguistic information in classroom input without guided support (see Lightbown 2008b; Muñoz 2008). In contrast, older learners with substantial analytical abilities might be able to make the most of different CF types to notice linguistic information in an autonomous manner, resulting in similar gains irrespective of CF types. In this respect, an ongoing concern worthy of further pursuit in classroom SLA is how teachers can best tailor their use of CF to match learners' age.

9. Peer CF

While research on teacher CF has evolved from observational to experimental, research on CF among L2 learners (henceforth, peer CF) has remained descriptive until recently. Historically, this line of research started, like that of teacher CF, with investigations of negotiation for meaning, with many studies comparing peer interaction and interaction between learners and native speakers or teachers. This comparison revealed that peer interaction offers a context where learners produce interactional moves that are arguably conducive to L2 development. L2 learners tend to work on communication breakdowns more than when they interact with native speakers (Varonis & Gass 1985), which leads to more feedback during peer interaction (Pica et al. 1996). Sato & Lyster (2007) found that learners provided one another with significantly more elicitation feedback than did native speakers, who in turn provided learners with significantly more reformulation feedback (see also Porter 1986; Gass & Varonis 1989; Shehadeh 1999; García Mayo & Pica 2000; Fujii & Mackey 2009). In addition, a few studies have demonstrated that peer CF occurring during conversational interaction can contribute to L2 development. In Adams' (2007) study, feedback between learners on different linguistic features (English locatives, past tense, questions, and vocabulary) during communicative tasks was tallied. Analyses on the tailor-made test revealed that the learners showed improvement on the items on which they had received feedback from other learners. Sato & Lyster (2012) conducted correlational analyses and showed that the frequency of feedback provided by peers was positively correlated with L2 development scores (difference

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between pre- and posttests). Hence, like interaction between learners and teachers, peer interaction and peer CF seem to have positive impacts on L2 learning.

It is not yet known why learners' interactional moves vary according to their interlocutors, but presumably learners' comfort level and the collaborative nature of peer interaction are key deciding factors. Varonis & Gass (1985), for instance, attributed the differential interactional moves used when learners interact with each other to their perception of 'shared incompetence' (p. 84), which provided them with a comfort zone in which they collaboratively worked on linguistic issues (see also Gass & Varonis 1990; Davis 1997; Leeser 2004; Foster & Ohta 2005). Similarly, Sato & Lyster's (2007) interview data revealed that, on the one hand, learners were under pressure when interacting with native speakers because they believed that their own English was 'broken' while their native-speaking partners were 'perfect speakers' (p. 138), but that on the other, while working with their peers, learners thought they had more time to decide what to say and felt much more comfortable testing their linguistic hypotheses (see also Swain, Brooks & Tocalli-Beller 2002; Gass et al. 2005).

Despite the amount of CF in peer interaction, however, the extent to which learners deliberately point out each other's grammatical errors seems to be low (see Williams 1999; McDonough & Mackey 2000; Mackey, Oliver & Leeman 2003; Sato 2007; Philp, Walter & Basturkmen 2010), thus distinguishing peer CF from teacher CF. Several reasons can be proposed for this. First, when engaging in a task, learners tend to focus on task completion by using any kind of communication strategy, including body language, which can be followed by simple acknowledgments such as 'yes' or 'no' (Doyle 1983; Kormos 1999). Second, peer CF can be more face-threatening than teacher CF. Foster's (1998) classroom observation data revealed that learners were unwilling to indicate communication problems, as it would make them feel or look incompetent. She claimed that 'uncoached negotiation for meaning is not alive and well' (p. 19: see also Buckwalter 2001; McDonough 2004). Somewhat positive in this regard is that Sato (in press) showed, with a factor analysis using questionnaire data, that learners are indeed hesitant in correcting their classmates' linguistic errors, but this does not mean that they do not want to be corrected. That is, as much as learners wish to be corrected by the teacher, they are ready to collaboratively work with other learners on language errors. However, unlike teacher CF, peer CF lacks pedagogical force in the sense that, first, learners may intentionally disregard their classmates' CF due to mistrust of each other's linguistic abilities (see Yoshida 2008a; Philp et al. 2010) and, second, peer CF tends only to provide segmentations of the partner's erroneous utterance (Pica et al. 1996). Toth (2008) compared learner-led discourse and teacher-led discourse in L2 classrooms and found that learner-led discourse lacked linguistic foci. He concluded that the benefits of peer interaction 'come at the expense of consistency in attention to the target form' (p. 269).

Recently, however, researchers have started to manipulate classroom peer interaction in ways that compensate for the weaknesses of peer CF and that take advantage of the collaborative nature of peer interaction (for sociocultural approaches to collaborative interaction, see Donato 1994; Kowal & Swain 1994; Swain & Lapkin 1998, 2001, 2011; Storch 2001; Galaczi 2008). Fujii, Mackey & Ziegler's (2011) experiment gave training to adult EFL learners for working on communication breakdowns. The pre/post analysis on peer interaction revealed that the frequency of peer CF increased over time. Sato & Ballinger's (2012) data showed that training learners to provide CF to each other can lead

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them autonomously to shift attention to form during collaborative interaction; this was the case both for adult learners in an EFL context and for young learners in an immersion context. In addition, Sato & Lyster (2012) showed the effectiveness of this type of training on L2 development. In their study, university-level EFL learners who were trained to provide CF to their peers showed improvement both in accuracy and fluency, while those who engaged in peer interaction without such training improved only in fluency. Drawing on skill acquisition theory, Sato & Lyster claimed that, while peer interaction created opportunities for contextualized practice leading to automatization (i.e., fluency development), peer CF provided learners with additional opportunities to engage in repeated practice of accurate forms. Moreover, learners tended to produce similar and substantial amounts of modified output irrespective of CF type, suggesting that, at least for learners with sufficient grammatical knowledge, the opportunities to practise using target forms following CF was probably a contributing factor in the effectiveness of peer CF.

Of theoretical interest in peer CF is the fact that, for peer CF to occur, learners need to notice errors in their partners' utterances. This suggests that peer CF has two functions: learners may benefit not only from receiving (as is the case with teacher CF) but also from providing CF. To interpret the gains in accuracy development of learners who were trained to give each other CF, Sato & Lyster (2012) invoked the perceptual loop theory of monitoring proposed by Levelt (1983). They argued that, on the one hand, provision of CF entails detection of errors in the comprehension system, which may have a positive impact on interlanguage restructuring, but on the other, CF from other learners has the same function as teacher CF in that it enhances monitoring during production at the preverbal stage. As a result, peer CF benefits both providers and receivers.

In summary, research indicates that peer interaction provides a context in which L2 learners can work collaboratively by giving each other CF. Also, due to the social nature of peer interaction, learners feel comfortable in testing their linguistic hypotheses following CF from their classmates. However, it is only recently that research has started to examine the effectiveness of peer CF on L2 development and its pedagogical potential in classroom settings. We do not know how far the variables that mediate the effectiveness of teacher CF (e.g. age, linguistic targets, individual differences) are applicable to peer CF. Also, it remains unlikely that the impact of training learners to provide CF will be the same across all instructional settings, for the obvious reason that, in order to provide appropriate CF, learners need a threshold level of target language knowledge. Nevertheless, for peer CF to affect L2 development positively, the classroom first needs to be established as a collaborative learning environment, because, unlike teacher CF, peer CF on language errors can be a socially unacceptable behaviour from the perspective of both provider and receiver. Peer CF research has much to draw on from teacher CF research and is a promising area of further inquiry.

10. Conclusion

Lyster & Ranta's (1997) surprisingly controversial conclusion (see Long 2007) from 16 years ago still holds true: 'Teachers might want to consider the whole range of techniques they have

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at their disposal rather than relying so extensively on recasts' (p. 56). To do so, teachers need to make choices in accordance with linguistic targets, interactional contexts, students' age and proficiency, and the classroom's communicative orientation and curricular objectives. Use of only one type of CF could never cover all these bases, because, as Ammar & Spada (2006) concluded, 'one size does not fit all' (p. 566). Ellis (2012) argued that 'it may be fundamentally mistaken to look for the most effective type of strategy' and that 'the single "best" strategy may be a chimera' (p. 263). This is because the multifaceted and inherently cultural nature of language classrooms makes it impossible to prescribe only one type of CF across all instructional settings (Seedhouse 2004; Lyster & Mori 2006). Classroom research is likely to yield more productive outcomes by moving away from dichotomous comparisons of CF strategies that isolate CF from other relevant instructional variables and towards an examination of combinations of CF types that more closely resemble teachers' practices in classroom settings (as in the mixed-CF conditions in studies by Algarawi 2010 and Kartchava 2012).

The most effective teachers are likely to be those who are willing and able to orchestrate, in accordance with their students' language abilities and content familiarity, a wide range of CF types that fit the instructional context. Depending on the interactional context, learners are likely to notice the corrective quality of recasts (Oliver & Mackey 2003), especially in cases where the recasts have been shortened and/or provided with added stress to highlight the error. Also beneficial are recasts provided by a teacher to scaffold interaction during instruction when target forms are beyond a learner's current abilities. As Nicholas et al. (2001) concluded, however, 'there is a point beyond which recasts are ineffective in changing stabilized interlanguages' (p. 752). Beyond that point, learners are likely to benefit more from being pushed to self-repair by means of prompting, especially in cases where recasts could be perceived ambiguously as approving their use of non-target forms and where learners have reached a developmental plateau in their use of the non-target forms. Negotiating for comprehensibility and continued recasting of what students already know (but fail to use accurately) may fall short of ensuring continued development of target language accuracy. Similarly, continued prompting of learners to draw on what they have not yet acquired will be equally ineffective.

Although the provision of oral CF is undoubtedly more effective than no CF, there are still many variables that interact to influence CF effectiveness differentially. To capture the complexity of this interaction, research needs to move beyond one-dimensional comparisons of CF types and towards a more nuanced and multidimensional analysis of the variables that make one type more effective than others in a given context. To this end, Russell & Spada (2006) called for greater attention to 'the constellation of moderating variables that could make a difference regarding CF effectiveness' (p. 156). This constellation evokes a complex of variables intersecting at cognitive, linguistic, and contextual levels, all of which have not only theoretical value but also practical implications for teachers who still face the timeless questions of when, what, and how to correct (e.g. Hendrickson 1978).

At the cognitive level, individual differences play a substantial role; learners' age stands out in particular, because younger learners seem especially sensitive to the impact of CF (Oliver 2000; Oliver & Mackey 2003; Lyster & Saito 2010). It would be timely if future research were to match the increasingly detailed information about how recast effectiveness is constrained

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by individual differences with similar information about other CF types. Also of importance in relation to cognitive variables are the effects over time of the different types of processing triggered by different types of CF as manifested (or not) by immediate (or delayed) learner repair. At the linguistic level, recast effectiveness has been shown to increase as the length of the recast and the number of changes it contains decrease, and also as more intonational stress is added (Loewen & Philp 2006; Sheen 2006; Egi 2007). It would be of interest to match this information with similar information about the characteristics of prompts and explicit correction that make some types more effective than others. Moreover, there is growing evidence that CF effectiveness varies not only with respect to specific grammatical targets (Ellis 2007; Yang & Lyster 2010), but also with linguistic domain (morphosyntax vs. vocabulary vs. pronunciation vs. pragmatics). We consider the effects of different types of CF on different types of linguistic targets to be an especially promising topic for further investigation. At the contextual level, as previously mentioned, an increasing number of studies have shown that learner responses to feedback vary across a range of instructional settings; as yet, however, no research has investigated whether the observed differences in discourse patterns across instructional settings affect target language development differently. Another contextual variable ripe for further research is CF provided by peers and the potential benefits of strategy training for strengthening its role during peer interaction.

Of the many avenues identified throughout this review as promising for further research, we recommend those most likely to invest CF research with greater educational value. At the same time, however, we acknowledge the challenges entailed in designing classroom studies that would account for the multiplicity of variables affecting CF effectiveness in the hurly-burly of L2 classrooms. Of particular interest may be replications of observational and quasi-experimental classroom studies undertaken with a view to determining the generalizability of previous research while further illustrating, in more fine-grained ways, how CF effectiveness is differentially affected by instructional setting.

Acknowledgements

We gratefully acknowledge the helpful and efficient support of the editor of *Language Teaching*, Graeme Porte, as well as the valuable feedback provided by five anonymous reviewers.

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