Interactional Feedback as Instructional Input:

A Synthesis of Classroom SLA Research

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Abstract

This article reports on an increasing number of SLA studies showing that interactional feedback plays a significant role in improving classroom learners' use of the target language. Whereas the provision of feedback has proven more effective than no feedback, there are still many variables that mediate the effectiveness of interactional feedback. This article synthesizes a set of classroom studies of interactional feedback taking into account four mediating variables: (a) feedback types, (b) instructional setting, (c) learners' age, and (d) linguistic targets. The synthesis leads to the conclusion that prescriptions to use only "implicit negative feedback" at the expense of other more overt types of interactional feedback are not supported by classroom research. The article closes with a recommendation for teachers to adopt a wide variety of interactional feedback techniques in accordance with a range of contextual, individual, and linguistic variables.

(Key words: interactional feedback, instructional input, second language acquisition, classroom research, second language pedagogy)

1. Introduction

In order for second language learners to process input in ways that ensure its intake, they first need to "notice" to some degree the target features in the input (e.g., Gass, 1988; Schmidt, 1990, 1994). In classroom settings, noticing can be facilitated by input features that have been contrived for instructional purposes through "input enhancement" (Sharwood Smith, 1993). According to Sharwood Smith, teachers can manipulate instructional input in ways that create either positive or negative input enhancement. Positive input enhancement is intended to make certain forms more salient in the input, through color coding or boldfacing in the case of written input, and through intonational stress and gestures in the case of oral input. Negative input enhancement is intended to flag certain forms as incorrect, primarily through the use of interactional feedback.

Processing instructional input only to "notice" target forms, however, does not necessarily develop an adequate level of metalinguistic awareness to ensure intake of the target forms. Noticing triggers only the first of two levels of awareness posited by Ellis (2002), that is, awareness of the formal properties of target forms, but not the second level: that is, awareness in the sense of developing an explicit representation of the target form (see also Schmidt, 1990).

Classroom learners need to do more than merely notice enhanced forms in the input. They need also to engage in some degree of "elaboration" (Sharwood Smith, 1981, 1993), which entails the processing of instructional input in ways that develop learners' metalinguistic awareness.

There has been considerable debate in the field of SLA, however, concerning (a) the extent to which metalinguistic awareness actually contributes to a learner's underlying system of implicit knowledge over time, improving spontaneous language production (White & Ranta, 2002), as well as (b) the extent to which instructional input should be form-oriented or meaning-oriented, or how it can be organized to include both orientations in complementary ways. At one extreme, it is generally acknowledged that the exclusive use of traditional grammar-translation approaches develops learners with extensive metalinguistic knowledge, able to achieve high scores on discrete-point grammar tests yet unable to communicate fluently and accurately in communicative contexts (e.g., Hu, 2003). At the other extreme, research in immersion classrooms has demonstrated that, even though learners achieve high levels of communicative ability, simply being exposed to rich content-based instructional input falls short of developing adequate levels of metalinguistic knowledge required for grammatically accurate and sociolinguistically appropriate production (e.g., Swain, 1985; Harley, Cummins, Swain, & Allen, 1990). Between the extremes of grammar translation and content-based instruction are various yet related proposals for integrating more attention to language form while maintaining an instructional emphasis on meaning: "focus on form" (Doughty & Williams, 1998; Long, 1991, 1996), "form-focused instruction" (Ellis, 2001; Spada, 1997), and "counterbalanced instruction" (Lyster, 2007; Lyster & Mori, 2006). These proposals maintain that, even in the case of immersion and content-based classrooms, "metalinguistic awareness has the potential to serve students as an indispensable tool for extracting linguistic information from meaning-oriented input" (Lyster, 2007, p. 65).

Instructional input that counterbalances both form and meaning in complementary ways brings interactional feedback back to the forefront of second language pedagogy. That is, interactional feedback allows teachers to provide students with helpful information about their language production while focusing on non-linguistic content that engages students cognitively and motivates them to use the target language. Research in support of interactional feedback suggests that it may be precisely at the moment when students have something to say that a focus on language can be most effective, rather than postponing a focus on language until a traditional grammar lesson (Lightbown, 1991, 1998; Lightbown & Spada, 1990; Long, 1991; Lyster, 1998c). Spada and Lightbown (1993, p. 218) described one ESL teacher in particular who organized her teaching "in such a way as to draw the learners' attention to errors in their

interlanguage development within the context of meaningful and sustained communicative interaction." Similarly, Lyster (1998c) described immersion teachers who, during content-based lessons, "were able to bring language form back into focus, without breaking the communicative flow, as they briefly negotiated form with students and then continued to interact with them about content" (p. 70). That teachers are able to intervene in this way, without inhibiting students from continuing, suggests that such interventions are integral to classroom discourse and supported by what De Pietro, Matthey, and Py (1989) called "le contrat didactique." In this way, interactional feedback plays a pivotal role in the kind of scaffolding teachers need to provide to individual learners to promote continued second language growth. Moreover, classroom intervention studies have increasingly demonstrated that feedback does play a significant role in improving classroom learners' use of the target language (e.g. Ammar & Spada, 2006; Ellis, 2007; Ellis et al., 2006; Lyster, 2004; Sheen, 2007) and three recent meta-analyses have confirmed its overall benefits on accuracy development (Lyster & Saito, 2010; Mackey & Goo, 2007; Spada & Russell, 2006).

Whereas the provision of feedback has proven more effective than no feedback, there are still many variables that mediate feedback effectiveness. The purpose of this article is to synthesize research conducted on interactional feedback and some of the key variables that mediate its effectiveness, namely: (a) feedback type, (b) instructional setting, (c) learners' age, and (d) linguistic targets. While the terms 'corrective feedback' and 'negative feedback' appear almost interchangeably throughout this research, we have chosen to use the term 'interactional feedback' (e.g., Mackey & Oliver, 2002) to reflect the observation that feedback moves can be used by teachers "in ways that sustain classroom interaction and maintain its coherence, but without consistently fulfilling a corrective function" (Lyster & Mori, 2006, p. 272). Thus, while feedback can be defined simply as "responses to learner utterances containing an error" (Ellis, 2006, p. 28) it can also be viewed, as will become evident, as a "complex phenomenon with several functions" (Chaudron, 1988, p. 152).

2. Feedback types

This section first presents a well known taxonomy of interactional feedback types drawn from classroom observational studies, along with divergent theoretical perspectives that support the use of some feedback types more than others. Then a set of quasi-experimental classroom studies designed to assess the effectiveness of different types of feedback will be reviewed.

Based on descriptive studies of teacher-student interaction (Lyster, 2002; Lyster & Mori, 2006; Lyster & Ranta, 1997), feedback moves can be classified as one of three types: explicit

correction, recasts, or prompts. On the one hand, explicit correction and recasts both supply learners with target reformulations of their non-target output. These moves are defined as follows:

Explicit correction. The teacher supplies the correct form and clearly indicates that what the student had said was incorrect.

> Extract 1 (Lyster & Ranta, 1997)
>
> St: *Nous coupons les pailles en six différents grosseurs et attache les pailles avec le ruban gommé.*
>
> "We cut the straws into six different thicknesses and attaches the straws with tape."
>
> T: *Euh, David, excuse-moi. Je veux que tu te serves du mot "longueur." Vous avez coupé les pailles en différentes longueurs. Pas grosseurs.*
>
> "Uh, David, excuse me. I want you to use the word 'length'. You cut the straws into different lengths. Not thicknesses

Recasts. The teacher implicitly reformulates all or part of the student's utterance:

> Extract 2 (Sheen, 2007):
>
> S: There was fox.
>
> T: There was a fox.

Prompts, on the other hand, include a variety of signals, other than alternative reformulations, that push learners to self-repair (i.e., elicitation, metalinguistic clues, clarification requests, and repetition).

Elicitation. The teacher directly elicits a reformulation from the student by asking questions such as "*How do we say that in French?*" or by pausing to allow the student to complete the teacher's utterance, or by asking the student to reformulate his or her utterance.

> Extract 3 (Yang & Lyster, 2010)
>
> S: Once upon a time, there lives a poor girl named Cinderella.
>
> T: Once upon a time, there…?

Metalinguistic clues. The teacher provides comments or questions related to the well-formedness of the student's utterance such as "*We don't say it like that in English.*"

> Extract 4 (Ellis, 2007):
>
> S: Men are clever than women.
>
> T: You need a comparative adjective.

Clarification requests. The teacher uses phrases such as "*Pardon?*" and "*I don't understand*" following learner errors to indicate to students that their utterance is ill-formed in some way and that a reformulation is required.

> Extract 5 (Loewen & Nabei, 2007)
>
>> S: Why does he taking the flowers?
>>
>> T: Sorry?

Repetition. The teacher repeats the student's ill-formed utterance, adjusting intonation to highlight the error.

> Extract 6 (Yang & Lyster, 2010)
>
>> S: Mrs. Jones travel a lot last year.
>>
>> T: Mrs. Jones travel a lot last year?

Researchers tend to differentiate interactional feedback in terms of its *explicitness*, defined as "the perceptual salience (e.g., intonation) and linguistic marking (by metalanguage) with which the negative information is delivered" (Ortega, 2009, p. 75). However, classifying feedback categorically as either explicit or implicit has proven problematic. Recasts, for example, are often considered categorically implicit (Long, 1996; Long & Robinson, 1998), yet research shows that, depending on contexts as well as the characteristics of recasts (such as linguistic targets, length, and number of changes), recasts can also be quite explicit (Ellis & Sheen, 2006; Nicholas, Lightbown, & Spada, 2001; Sheen, 2004, 2006). Similarly, feedback considered explicit also takes on a variety of forms, especially in terms of *informativeness*, that is: "how much information is provided about the blame of the ungrammaticality" (Ortega, 2009, p. 75). Thus, some explicit feedback techniques include provision of the correct form (e.g., Lyster & Ranta, 1997; Sheen, 2007), while others withhold the correct form and either provide metalinguistic information (e.g., Ellis, 2007) or simply a metalinguistic "clue" (i.e., not an explanation) indicating that the learner's utterance is ill-formed (e.g., Loewen & Nabei, 2007).

Prompts also range from implicit to explicit, but are distinguishable from recasts and explicit correction in terms of what Ortega (2009) calls *demand*: "the degree of conversational urgency exerted upon interlocutors to react to the negative feedback" (p. 75). Prompts are not necessarily explicit in terms of the linguistic information they provide, but might be considered explicit in terms of their illocutionary force. That is, by prompting, a teacher provides cues for learners to draw on their own resources to self-repair, whereas by providing explicit correction or recasting, a teacher both initiates and completes a repair within a single move. That is, the distinguishing feature of prompts pertains less to their varying degrees of implicitness/explicitness and more to their common trait of withholding correct reformulations.

Prompts thus fit well with instructional discourse, as they resemble the "clueing" procedure or "withholding phenomenon" identified by McHoul (1990) in his study of feedback in subject-matter classrooms.

Comparing the effects of different types of interactional feedback is of theoretical interest because they arguably provide different types of linguistic evidence (positive or negative) and thus engage learners in different levels of cognitive processing (e.g., cognitive comparison in working memory in the case of recasts versus retrieval from long-term memory in the case of prompts). Explicit correction clearly provides both negative and positive evidence; prompts provide only negative evidence whereas recasts provide positive evidence and maybe negative evidence.

Drawing on L1 acquisition studies such as those by Farrar (1990, 1992), some second language researchers support the effectiveness of recasts for second language development, hypothesizing that recasts create ideal opportunities for learners to notice the difference between their interlanguage forms and target-like reformulations (e.g., Doughty, 2001; Long, 1996, 2007). For example, Long (1996) argued that conversational moves such as recasts benefit second language development because they provide learners with a primary source of negative evidence. He argued that, because recasts preserve the learners' intended meaning, they free up cognitive resources that would otherwise be used for semantic processing. Thus, with meaning held constant, recasts have the potential to enable learners to focus on form and to notice errors in their interlanguage production (see also Doughty, 2001).

Others have argued, however, that this is the case only in form-oriented classrooms where the emphasis on accuracy primes learners to notice the corrective function of recasts (Ellis & Sheen, 2006; Lyster, 2007; Lyster & Mori, 2006, 2008; Nicholas et al., 2001). Braidi (2002) and Leeman (2003) suggested that recasts serve as exemplars of positive evidence, which facilitates the encoding of new target representations. Ellis and Sheen (2006) reasoned that "whether recasts constitute a source of negative evidence (as it is often assumed) or afford only positive evidence ... will depend on the learner's orientation to the interaction" (p. 596). In addition, the ability of classroom learners to infer negative evidence from recasts by comparing them with their non-target output depends on whether the discourse context in which the recasts are delivered enables learners to perceive them as disapproving (rather than approving) the use of non-target forms (Lyster, 1998a). Recasts are well suited to communicative classroom discourse, because they maintain the flow of communication and keep students' attention focused on meaning. However, in many discourse contexts occurring during communicative

and content-based instruction, prompts that incite learners to switch their attention momentarily away from meaning toward form may be better suited than recasts to provide negative evidence.

Designing practice activities that are both communicative in purpose and controlled in the sense of requiring the use of specific target forms is challenging in any instructional context, and this is where prompts play a central role (Lyster, 2007). Given their aim to elicit modified output, prompts serve to scaffold opportunities for controlled 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. De Bot (1996) argued that second language 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 stimulate the development of connections in memory. The results of research in experimental psychology on the "generation effect" 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., Clark, 1995; deWinstanley & Bjork, 2004).

Classroom quasi-experimental studies[1] have generally shown more benefits for prompts and explicit correction than for recasts. With younger learners, Lyster (2004) investigated the effects of form-focused instruction and feedback on students' acquisition of grammatical gender in French. He found that form-focused instruction was more effective when combined with prompts than with recasts. Also with young learners, Ammar and Spada (2006) investigated the potential benefits of recasts and prompts on the acquisition of possessive determiners by French-speaking ESL learners. Both groups receiving feedback showed superior performance compared to the control group and, furthermore, while the group receiving prompts significantly outperformed the recast group on written and oral posttests, the effect of recasts depended on learners' proficiency levels.

With adult learners, Ellis, Loewen, and Erlam (2006) investigated the differential effects of recasts and metalinguistic feedback (i.e., a prompt consisting of repetition of the error followed by metalinguistic clues such as "you need past tense") on the acquisition of regular

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[1] A "quasi-experimental" classroom study is a research design that enables comparisons of at least two different groups of students: one group receiving a particular type of feedback and another group receiving either a different type of feedback or none at all. Pre-tests are given to all students in both groups just prior to the instructional treatments and immediate post-tests at the end of the instructional treatment. Ideally, delayed post-tests are then administered several weeks later to assess the extent to students they maintained over time what they had learned.

past tense in English. Results showed that metalinguistic feedback was overall more effective than recasts and that the effect was found mostly in the delayed posttest rather than the immediate posttest. Sheen (2007) compared the effects of recasts and metalinguistic, which included the correct form followed by metalinguistic explanation (e.g., "You should use the definite article 'the' because you've already mentioned 'fox'"), provided in the context of narrative-retelling tasks, on ESL learners' use of English articles. The metalinguistic group significantly outperformed the recast and control group, whereas the recast group did not perform significantly better than the control group. Loewen and Nabei (2007) compared the effects of recasts, clarification requests, and metalinguistic feedback, provided during meaning-focused tasks, on English question formation in a Japanese EFL context. There was no significant difference among the different feedback groups, which, as the researchers acknowledged, might be due to the brevity of the treatment session and the differential amount of feedback provided to different treatment groups during the treatment session. In their comparison of the effects of prompts and recasts on the acquisition of regular and irregular past tense forms by Chinese learners of English as a foreign language, Yang and Lyster (2010) found significantly larger effects for prompts, but more so in the case of regular than irregular past tense forms (see section 5 below).

The only classroom study to which one often refers to support the effectiveness of recasts in classroom settings is by Doughty and Varela (1998), who found "corrective recasting" more effective than no feedback. Their study did not directly examine the effects of recasts, however, because recasts were used solely as secondary moves in the event that the primary move, which was a prompt that repeated verbatim the learner's error failed to elicit self-repair. The teacher consistently used repetition to draw attention to the error and then recast only when students made no attempt at repair. As Doughty and Varela observed, 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).

Recently, Lyster and Saito (2010) adopted a meta-analytic procedure to statistically combine the results of 15 quasi-experimental classroom studies of oral feedback, which included seven of the aforementioned intervention studies (i.e., Ammar & Spada, 2006; Ellis, 2007; Ellis et al., 2006; Loewen & Nabei, 2007; Lyster, 2004; Sheen, 2007; Yang & Lyster, 2010) in order to examine the magnitude of improvement (roughly categorized as small, medium and large effects) resulting from three different types of feedback (i.e., recasts, explicit correction, and prompts). Their results suggested three patterns: (a) Recasts, prompts, and explicit correction all yielded significant effects; (b) prompts yielded large effect sizes and

proved significantly more effective in the within-group contrasts than recasts, which yielded medium effect sizes; and (c) the relative effects of explicit correction could not be distinguished from those of recasts and prompts. They interpreted these findings to mean that classroom learners (a) can benefit from the positive evidence available in recasts as well as from the opportunities recasts provide to infer negative evidence, but (b) seem to benefit even more from the negative evidence available in prompts and from the greater demand they impose for producing modified output. That the effects of explicit correction were not distinguished from the effects of recasts and those of prompts was attributed to the types of linguistic evidence available in explicit correction and the overlaps in this regard with recasts and prompts. That is, explicit correction—similar to recasts—conveys positive evidence by providing the correct form; at the same time, explicit correction—similar to prompts—conveys negative evidence by indicating that the student's utterance was incorrect.

In addition to the negative evidence that prompts provide, their effectiveness can be explained through skill acquisition theory, which entails a gradual transition from effortful use to more automatic use of target language forms, brought about through practice and feedback in meaningful contexts (DeKeyser, 2003, 2007). Proponents of skill acquisition theory advocate instructional techniques that help second language learners develop automaticity in target language use, including a judicious use of various prompts that push second language learners to notice their interlanguage forms and to practice emergent target forms in contexts of interaction (e.g., Lyster, 2007; Ranta & Lyster, 2007). Long (2007) challenged the psycholinguistic rationale for prompting, claiming that "acquisition of new knowledge is the major goal, not 'automatizing' the retrieval of existing knowledge" (p. 102), but, as Lyster (2007) pointed out, "the ultimate goal of instruction is not to continuously present only new knowledge to students, without sufficiently providing subsequent opportunities for assimilation and consolidation of that knowledge" (p. 119).

3. Instructional settings

Within the same classroom setting, Oliver and Mackey (2003) found that child ESL learners repeated recasts more frequently in explicit language-focused exchanges than in exchanges that were content-based, management-related, or communicative in nature. In addition to this observation of "within-group" differences, an increasing number of studies have shown that learner responses to feedback vary across a range of instructional settings; however, no research has as yet shown that such differences in discourse patterns across instructional settings differentially affect target language development.

Sheen (2004) compared error treatment patterns observed in (a) Korean EFL classrooms, (b) intensive ESL classrooms in New Zealand (Ellis, Basturkmen, & Loewen, 2001), (c) French immersion classrooms in Canada (Lyster & Ranta, 1997), and (d) adult ESL classrooms in Canada (Panova & Lyster, 2002). She found that the proportion of recasts used by teachers relative to total feedback was greater in Korean EFL and New Zealand ESL classrooms than in the French immersion and Canadian ESL classrooms. Furthermore, the students in Korean EFL and New Zealand ESL classrooms produced more uptake and repair than those in French immersion and Canadian ESL classrooms. Sheen (2004) suggested that "the extent to which learners produce uptake and repair may reflect their previous experiences of responding to CF [corrective feedback] in classrooms" (p. 291). That is, participants in Korean EFL and New Zealand ESL were students with at least a college-level education attending private language schools; in contrast, the Canadian ESL participants were adults taking high school level courses in a public adult education centre, and the immersion students were 9-11-year-old children primed to use their second language as a means for learning curricular content.

Yet, even within ostensibly similar programs (i.e., immersion) with similar learners (young public school children in North America), different patterns of learner responses to feedback have been observed. In their comparison of French and Japanese immersion classrooms, with similar types of learners (i.e., English-speaking students in 4th and 5th grade), Lyster and Mori (2006) observed similar interactional feedback patterns among teachers yet different patterns in student responses according to instructional setting, with the largest proportion of immediate learner repair resulting from prompts in French immersion and from recasts in Japanese immersion. Although the overall orientation of both the Japanese and French immersion classrooms was content-based, Lyster and Mori attributed the effectiveness of recasts at eliciting student uptake and repair in Japanese immersion classrooms to the Japanese immersion teachers' tendency to emphasize accurate oral production through various activities involving repetition of teacher models, which likely served to prime students for repeating recasts. In contrast, in French immersion classrooms where no such priming was observed, instances of learner uptake and repair were more likely to follow prompts than recasts. This led Lyster and Mori to propose their *Counterbalance Hypothesis*, which states that the extent to which classroom learners benefit positively from different types of feedback depends on the extent to which the feedback is different from (i.e., counterbalances) their classroom's overriding communicative orientation.

According to the counterbalance hypothesis, students in form-oriented classrooms, with opportunities for oral production practice and an emphasis on accuracy, are already primed to

notice the corrective function of recasts, which, at the same time, enable learners to reorient their attentional resources towards meaning in ways that contribute to the development of communicative ability. Averting an overemphasis on form at the expense of meaning in this way is important because, while learners who bias their attentional resources toward linguistic form benefit from their ability to detect formal distinctions, their attention to form may jeopardize their ability to process other equally important aspects of the input (Tomlin & Villa, 1994). In more meaning-oriented classrooms, however, when students' attention is focused on meaning via recasting, they remain focused on meaning, not form, because they expect the teacher's immediate response to confirm or disconfirm the veracity of their utterances (Lyster, 2002). In these settings, prompts enable teachers to draw students' attention to form and momentarily away from meaning. In meaning-oriented classrooms that do not usually provide opportunities for controlled production practice with an emphasis on accuracy, learners may detect the overtly corrective function of prompts more easily than the covert signals they need to infer from recasts, and they will benefit from processing the target language through the production of modified output in the form of self-repair.

It may be the case that the effectiveness of different types of interactional feedback is influenced by whether learners are in second or foreign language classrooms, as suggested by Mackey and Goo's (2007) meta-analysis of interaction studies. Their results revealed significantly larger effects in foreign language contexts than in second language contexts, but no difference at delayed post-tests. Lyster and Saito's (2010) meta-analysis of oral feedback studies conducted exclusively in classrooms, however, revealed no significant differences between second and foreign language settings, possibly reflecting the definitional fuzziness that undermines attempts to categorically attribute either second or foreign language status to instructional settings (Berns, 1990; Block, 2003; Stern, 1983). Mitchell and Myles (2004) avoid the distinction, arguing that "the underlying learning processes are essentially the same for more local and for more remote target languages, despite differing learning purposes and circumstances" (p. 6). Although the actual effects of interactional feedback on target language development may not differ significantly across second and foreign language settings, because of the cognitive processes triggered by feedback—irrespective of instructional setting, more qualitative types of research have much potential for contributing to "a better understanding of the relevant contextual variables that influence classroom learners' attentional biases toward one type of interactional feedback over another" (Lyster & Mori, 2006, p. 294).

4. Age

Around puberty (e.g., age 11 or 12), children's cognitive processes become more formal and abstract, propitious for logical and deductive reasoning in the absence of here-and-now contexts (e.g., Donaldson, 1978). Whereas it still remains controversial how and to what degree age of acquisition interacts with other factors (e.g., linguistic categories, quality and quantity of input, aptitude, attitude, motivation) to influence SLA processes, there is a general consensus that maturational change leads to a gradual *decline* in second language learning abilities. That is, learners whose second language exposure begins after this maturational change are considered less apt to achieve native-like performance than those benefiting from pre-puberty exposure (e.g., Bialystok, 1997; Birdsong, 2006; Dekeyser, 2000; Flege, 2003; Singleton, 2001, 2005). Despite much discussion as to the role of age in the field of SLA, the impact of learners' age on feedback effectiveness has, surprisingly, been given scarce research attention. In this section, we refer to a small body of research that has investigated age as a factor in feedback effectiveness.

As Marinova-Todd, Marshall and Snow (2000) stated, "even though teachers can do little to improve a student's age, they can do much to influence a student's learning strategies, motivation and learning environment" (p. 30). That is, second language instructional practices need to be tailored according to learners' age (see Muñoz, 2007), and such practices include the use of interactional feedback. In an observational study of 10 adult and 10 child ESL classrooms, Oliver (2000) identified various ways in which teachers modify their interactional strategies according to their students' age. In both age groups, with similar proficiency levels, students engaged in comparable interactional tasks with their teacher. The teachers tended to encourage adult learners to take risks, which, in turn, led them to produce more nontargetlike utterances and receive a greater amount of interactional feedback. In contrast, "teachers of children hold greater control of the interactions, reducing the opportunity for nontargetlike utterances by the younger learners" (p. 138). For example, teachers provided linguistic scaffolds for child learners by providing less syntactically complex input and selecting appropriate topics for them to discuss.

Mackey and Oliver (2002) followed up with a pre/post-test experiment in which 22 child ESL learners participated in three 30-minute information gap tasks in teacher-student dyads. Those in the experimental group received recasts following nontargetlike production of English question forms from adult native-speaker interlocutors, while no feedback was directed to those in the control group. With results showing that child learners benefited from interactional feedback and that the effects were more immediate than those observed with adult

ESL learners (cf. Mackey & Philp, 1998), Mackey and Oliver concluded that children's sensitivity to recasts seems to be due to the fact that implicit feedback such as recasts is functionally similar to L1 feedback given by caregivers.

In their meta-analysis of classroom feedback studies, Lyster and Saito (2010) examined age as a continuous variable in a simple regression analysis that classified participants into three age categories: (a) *child learners* with a mean age of 10-12 years, (b) *young-adult learners* with a mean age of 17-20 years, and (c) *adult learners* with a mean age above 23 years. Their results suggested that the effects of feedback are linearly related to age for both between-group and within-group contrasts: that is, the younger the learners are, the more they benefit from feedback. Interestingly, although they acknowledged the small sample sizes in the statistical analysis, the results of regression analyses also revealed two possible patterns with respect to the relationship between age and different types of feedback: (a) younger learners benefited more from prompts than from recasts whereas (b) older learners benefited similarly from recasts and prompts. It may be the case, therefore, that younger learners are especially predisposed to the effects of interactional feedback, as suggested by Oliver (2000). Their greater susceptibility to feedback affects their sensitivity toward the impact of different types of interactional feedback, resulting in more significant benefits from the guidance of pedagogically enhanced feedback (i.e., prompts), at least in classroom settings, than from recasts delivered implicitly. In contrast, older learners predisposed to taking more responsibility over their learning processes might be able to make the most of different types of feedback by utilizing their analytical abilities in ways that result in similar gains, irrespective of feedback type.

5. Linguistic targets

How should teachers vary their use of feedback in response to learners' grammatical, lexical, and phonological errors in classrooms? Few studies have actually investigated the relationship between different types of feedback (e.g., recasts, prompts, and explicit correction) and different linguistic targets (i.e., grammatical, lexical, and phonological development). Among them, Lyster's (1998b) immersion classroom study revealed that the 4th-5th-grade teachers followed fairly distinct patterns in selecting feedback types in accordance with error types. They tended to use recasts after phonological and grammatical errors, and prompts after lexical errors. The highest rate of immediate learner repair followed teacher feedback on phonological errors. That is, following feedback, learners repaired 62% of their phonological errors, 41% of their lexical errors, and only 22% of their grammatical errors. Arguably, the teachers were on the right track in their decisions to recast phonological errors (which require correct models for learners to

imitate) and to provide prompts after lexical errors (which, if recast, might risk being ambiguously perceived by students as acceptable alternatives), but could have perhaps used prompts more frequently in response to grammatical errors, because almost two-thirds of all grammatical repairs produced by students followed prompts.

Many descriptive studies have since confirmed that recasts of phonological errors are more noticeable than recasts of errors in morphosyntax (Carpenter, Jeon, MacGregor, & Mackey, 2006; Ellis et al., 2001; Han, 2008; Mackey et al., 2000; Sheen, 2006). In short, these empirical studies suggest that recasts might be relatively effective for L2 phonological development compared to other domains such as L2 morphosyntax, arguably because learners tend to perceive the corrective force of teachers' recasts on pronunciation errors. Recasts of grammatical errors are potentially ambiguous for classroom learners accustomed to focusing more on communication, because such recasts might appear to be identical or alternative ways of saying the same thing in order to confirm message comprehensibility or veracity. In contrast, recasts of pronunciation errors might be perceptually salient as well as unequivocal in terms of purpose, arguably because a student is unlikely to perceive such a recast as an alternative yet equally correct variant. Furthermore, recasts might trigger processing mechanisms that are particularly conducive to pronunciation development. A recent quasi-experimental classroom study by Saito (2009, 2010), comparing the effects of instruction with and without recasts targeting pronunciation errors in the use of English /r/ by Japanese learners of English, found that learners receiving recasts made significantly more progress than those not receiving recasts.

In a study of learners of Japanese as a foreign language receiving recasts as they participated in dyadic communicative tasks with native speakers of Japanese, Egi (2007) provided some evidence that learners processed recasts differently according to whether the linguistic target was morphosyntatic or lexical. 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 concluded that learners' noticing of positive evidence may be more likely to result in immediate interlanguage changes in lexical learning than in morphosyntactic learning. In their meta-analysis of 25 interaction studies (7 lexis studies and 18 grammar studies), Mackey and Goo (2007) confirmed that the effects of interaction are significantly larger on lexical development than on grammatical development, especially at the immediate post-tests. Han (2008) argued that, for recasts to have any effect on morphosyntactic development in classroom settings, teachers would first need to have an unambiguous understanding of the meaning of the learner's utterance and then, in those

instances, provide recasts in an ongoing and systematic manner focusing on one grammatical morpheme.

To the best of our knowledge, only two classroom studies have examined the differential effects of feedback 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 (e.g., "You need a comparative adjective") on regular past tense *-ed* and comparative *–er*. These features were hypothesized to differ in terms of grammatical difficulty, with past *-ed* considered easier than the comparative *-er*. The group receiving metalinguistic explanations showed greater effects on the more difficult form than the less difficult form, whereas the recast group did not show any significant gains over the control group on any of the measures. The second study was conducted with Chinese EFL classroom learners by Yang and Lyster (2010), comparing the differential effects of recasts and prompts on regular and irregular past-tense forms in English, thus invoking a comparison of rule-based versus exemplar-based forms (Skehan, 1998). The effects of prompts were larger than those of recasts for increasing accuracy in the use of regular past-tense forms, whereas prompts and recasts had similar effects on improving accuracy in the use of irregular past-tense forms, leading to the following interpretations: (a) learners benefit from the practice effects of a teacher's prompt to retrieve and apply the regular past-tense rule during online communication, because the generative and compact rule-based system is otherwise difficult for learners to access during online processing; (b) learners can improve their control over irregular past-tense forms already stored in the exemplar-based system simply by hearing them in the input, because items stored in the less structured exemplar-based system can usually be retrieved quickly and with fewer processing constraints and no internal computation. We consider the effects of different types of feedback on different types of linguistic targets to be an especially propitious topic for further investigation.

6. Pedagogical implications and conclusion

We close this paper with pedagogical suggestions for practitioners. First, empirical research has demonstrated the overall effectiveness of interactional feedback in classroom settings and some theoretical accounts suggest that it may even play a pivotal role in second language pedagogy driven by oral interaction. This is especially the case in content-based and communicative classroom settings where feedback can be used to draw learners' attention to form while their primary focus is on meaning, thus playing a crucial role in their continued growth of form-meaning mappings as well as their transition from effortful to automatic use of rules. Second,

despite the fact that implicit types of feedback such as recasts are employed most frequently in various classroom settings, they are not necessarily the most effective feedback practice. We recommend that teachers may need to adopt a wide variety of feedback techniques (i.e., not only recasts but also explicit correction and prompts) in accordance with a range of contextual, individual, and linguistic variables.

With respect to the instructional setting and its overall communicative orientation, prompts might prove especially beneficial in communicatively-oriented and content-based classrooms where learners would otherwise be required to process the target language exclusively through content and meaning-based activities. In form-oriented classrooms, however, where learners have been primed to view language as an object of study and thus to perceive the corrective force of feedback, all types of feedback might be equally effective but recasts might be especially effective for averting an overemphasis on form at the expense of meaning. With respect to age, because the impact of interactional feedback might be relatively strong for young learners, teachers need to carefully enhance the pedagogical potential of feedback by not only recasting child learners' nontargetlike forms but also by providing explicit signals to raise their metalinguistic awareness (i.e., explicit correction) and pushing them to practice the targetlike forms through meaningful discourse (i.e., prompts). Older learners might not react very differently to different types of feedback, being able to make the most of interactional feedback in ways that result in similar gains regardless of feedback type. Concerning the linguistic focus of feedback, recasts might be beneficial for learners' phonological errors due to their relative saliency, whereas prompts might be more useful in response to learners' grammatical errors, but this of course depends on the learners' current stage of development and whether or not they have already begun to use the target feature (Nicholas et al., 2001). Otherwise, recasts can also serve important discourse functions in content-based and communicative classrooms that help to scaffold interaction in ways that move lessons ahead, especially when target forms are beyond students' current abilities.

Based on empirical evidence, we have argued in this paper that interactional feedback has a key role to play in instructional input. However, this does not mean that the primary effects of feedback are necessarily input driven. The range of feedback types that teachers have at their disposal include some that provide learners with positive exemplars in the input and others that provide negative evidence to prompt learners' to modify their output. Thus, whereas recasts potentially serve as input enhancement in some classroom settings, especially those with a form-focused orientation, prompts lead to what Takashima and Ellis (1999) called output enhancement: namely, more accurate output that has been enhanced or modified relative to the

learner's initially erroneous utterance. As classroom learners process interactional feedback, retrieval and opportunities for contextualized practice are arguably more effective catalysts for second language development than merely "noticing" target forms during interaction. Prescriptions to use only "implicit negative feedback" at the expense of other more overt types of interactional feedback (e.g., Long, 2007) have not been supported by classroom research and are reminiscent of Krashen's (1982, 1985) equally unsubstantiated proscription of direct instruction that was based on the argument that direct instruction fails to serve as input for acquisition and therefore remains unavailable for spontaneous production.

The effectiveness of interactional feedback continues to attract the attention of researchers with theoretical interests in the cognitive processes it triggers as well as practitioners with practical interests in how feedback can be effectively yet seamlessly integrated into classroom interaction. In addition to continued research to ascertain the variable effects of different types of feedback relative to their degrees of explicitness, informativeness, and demand (Ortega, 2009), further research is warranted to explore how the effects of different types of interactional feedback vary as a function of the learners' age and other individual characteristics, the nature of the linguistic targets, and the overall communicative orientation of the instructional setting.

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