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NON-VERBAL FEEDBACK

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Introduction

In this chapter, we present how non-verbal features, such as gestures, play an integral role in classroom interaction, including corrective feedback. First, we discuss the benefits of corrective feedback in general and introduce some characteristics of corrective feedback that may impact its effectiveness. Then, we review some descriptive and interventionist gestural studies in the field of second language acquisition (SLA) to present how gestures have been used by teachers and students in the language classroom, as well as to show whether or not such gestures have any impact on various domains of second language (L2) learning. Next, we review some gestural studies which were conducted in relation to corrective feedback. Finally, we conclude this chapter with suggestions for future studies and pedagogical implications.

Corrective Feedback

Corrective feedback during meaning-focused L2 interaction has proven to be an effective mechanism for increasing both noticing of linguistic structures and L2 development (e.g., Li, 2010; Lyster & Saito, 2010; Lyster, Saito, & Sato, 2013; Russell & Spada, 2006). Studies of noticing have relied on a variety of measures such as online and retrospective reports to determine learners' attentional focus. But most importantly, quasi-experimental studies have found that in general, learners who are provided with corrective feedback perform significantly better on subsequent measures of linguistic performance than do learners who have not received corrective feedback.

In addition to investigating the overall benefits of corrective feedback, researchers have also examined the characteristics of corrective feedback that may influence its effectiveness. Several corrective feedback characteristics in particular have received attention, including its input-providing or output-prompting qualities (e.g., Goo & Mackey, 2013; Lyster & Ranta, 2013), its degree of implicitness (e.g., Ellis, Loewen, & Erlam, 2006), and its linguistic targets (e.g., Brown, 2016). A seminal study into the characteristics of corrective feedback is Lyster and Ranta's (1997) description of corrective feedback in high school French immersion classes in Canada, in which they identified six different types of feedback, namely recasts, elicitations, explicit correction, clarification requests, metalinguistic cues, and repetition. In a recent meta-analysis, Brown (2016) found that recasts accounted for 57% of corrective feedback in descriptive studies, while prompts occurred 30% of the time.

Additionally, studies have conducted fine-grained analyses of discoursal features that accompany corrective feedback. For example, Loewen and Philp (2006) investigated the prosody that teachers used when providing recasts. They found that recasts accompanied by declarative intonation were more likely to be followed by uptake, but the linguistic targets that received recasts with interrogative intonation, as in Example 1, were more likely to be produced accurately by L2 learners on a subsequent posttest.

> Example 1: Recast with interrogative intonation (Loewen & Philp, 2006, p. 556)
>
> Student: somebody steal my paper (.) stolen
> Teacher: someone stole your paper?

In spite of numerous previous studies, many of which are reviewed in this volume, there are still aspects of corrective feedback that remain relatively under-investigated. One such area is the issue of non-verbal feedback that either accompanies oral corrective feedback or is provided by itself without any oral component. In order to better situate the few studies that have examined non-verbal feedback, a review of several of the more general aspects of non-verbal communication and SLA is necessary.

Non-Verbal Behavior and L2 Learning

Non-verbal behavior is an overarching term which has been used to refer to various behavioral elements of communication that play an integral role in human interaction, such as facial expressions, eye movements, and body postures (e.g., Hall, Coats, & Labeau, 2005; Jungheim, 2001). For example, during a phase of corrective feedback, an instructor may keep maintaining eye contact with a learner even after the learner responded to the feedback. This could indicate that the turn is still the learner's because the response was still incorrect. Similarly, tilted head and pursed lips may indicate a problem with the learner's response. Among

various types of non-verbal behavior, gesture is a type of non-verbal behavior that is used for communication and it can occur either by itself or it can accompany verbal discourse, in which case it is considered co-expressive with speech.

Gestural Studies and Education

Gesture has been investigated using several different frameworks, but one of the more common ones is McNeill's (1992) classifications, who has identified the following categories. *Emblems* are gestures that have specific meanings that are culturally determined and do not need to be accompanied by speech to convey their meaning. The gesture of the thumb and index finger making a circle with the other fingers extended upward is an example that means 'okay' in the United States, but signifies 'money' in Japan. *Iconic* gestures are those that present images of concrete entities and/or actions (Example: Thumbs and index fingers of both hands create a circle while saying, "Please shape the dough into *a round shape*."). *Metaphoric* gestures also present an image, but of abstract concepts (Example: Right and left arms are extended outwards slightly and moved vertically repeatedly. Palms are held upwards as if they are holding something inside while saying, "We discussed two options. Which one is better—*Option A or B*?"). *Deictic* gestures are pointing with the finger or other body parts and they are used to indicate both concrete and abstract entities (Example: An index finger points to two types of cat food one by one while saying, "Which one is better for our cat? *This one or that one*?"). *Beats* gestures refer to vertical or horizontal hand movements which are made with the rhythm of speech (Example: Extended right arm moves in accordance with the emphasis of a sentence, "First, I will describe the procedure. *Then*, you will make your own sauce.") (McNeill, 1992, except for the examples).

The use of gestures has received significant attention in the field of psychology, education, and communication studies. Education researchers have conducted observational studies in classrooms and found that teachers frequently incorporate gestures while teaching (Alibali, Flevares, & Goldin-Meadow, 1997; Goldin-Meadow, Cook, & Mitchell, 2009; Crowder, 1996; Perry, Birch, & Singleton, 1995; Roth, 2001; Roth & Lawless, 2002a, 2002b) and that gestures are often used to obtain students' attention in class (e.g., Flevares & Perry, 1995). Some studies further examined if gestures impact learning in general (e.g., Cook, Yip, & Goldin-Meadow, 2010; Goldin-Meadow, Cook, & Mitchell, 2009; Goldin-Meadow & Sandhofer, 1999; Goldin-Meadow & Singer, 2003). For instance, Goldin-Meadow and her colleagues examined how seeing and producing gestures facilitate the learning of mathematical concepts. In Goldin-Meadow et al. (2009), one group of children was directed to point out the relevant numbers (4 and 5) of a math equation (e.g., 4 + 5 + 7 = ___ + 7), whereas the second group was told to point at partially relevant numbers (4 and 7 or 5 and 7) and the third group was told not to use any gestures. The researchers found that the first condition surpassed the remaining groups on a subsequent math test. Overall, their findings suggested that seeing the adult's or instructor's gestures and producing appropriate gestures are beneficial for student learning.

Observational Gesture Studies in SLA

Extending this line of research, studies in the field of SLA have also investigated the relevance of gestures in relation to L2 learning. Since 2000, several observational studies have been conducted in language classrooms (e.g., Allen, 2000; Faraco & Kida, 2008; Hudson, 2011; Inceoglu, 2015; Lazaraton, 2004; Smotrova 2014; Smotrova & Lantolf, 2013; Tellier, 2006; Wang, 2009; Zhao, 2007).

Several researchers have observed language classrooms to understand how gestures and other non-verbal features are used in a language classroom. Allen (2000), for example, videotaped six 55-minute Spanish as a foreign language classes and identified what types of gestures the instructor incorporated. She found several functions of gestures, including: (a) use of culture-specific emblematic gestures such as pointing to one's eye to indicate "Watch out!", (b) to accent a particular word or phrase, (c) to describe the meaning of vocabulary words (e.g., *close the textbook*), (d) to indicate a referent point such as people or objects, and (e) to maintain turn-taking. Furthermore, she found that the teacher's facial expressions that revealed emotions also played a significant role in classroom interaction.

One of the notable function of gestures in Allen's study is how gestures were used to convey meaning in a language classroom. Similarly, Lazaraton (2004) also reported how gestures served as another type of input to L2 learners. She observed three English as a second language (ESL) classrooms in the United States taught by a Japanese ESL graduate student. The class involved several instances of incidental vocabulary lessons and Lazaraton's gestural analysis showed that the instructor's gestures illustrated the meaning of the verbs without verbal explanations. For instance, when introducing the word *weave*, the instructor moved her hands close to each other to show a knitting motion while saying *What does weave mean?* simultaneously. This study included detailed description of gestures which were used to describe the meaning of verbs.

Another descriptive study is Faraco and Kida's (2008) exploration of the non-verbal features, including gestures and gaze, that accompanied the negotiation of meaning during native/non-native interaction in L2 French. The authors conducted a close analysis of the discourse and non-verbal actions that occurred during specific negotiation sequences, finding that non-verbal behavior could have a positive impact on negotiation for meaning. For example, teachers used gaze to indicate the recipient(s) of verbal feedback, while hand and body gestures were used, either by themselves or accompanying verbal feedback, as a 'meta-linguistic gloss' (p. 292). However, Faraco and Kida also identified negative impacts of non-verbal behavior. Specifically, the abandonment of mutual gaze by the teacher created ambiguity regarding the function of the verbal negotiation, and the teacher's provision of similar gestures on both corrections (i.e., recasts)

and repetitions of learner utterances created misunderstanding of the teacher's corrective intent.

Although Allen (2000), Lazaraton (2004), and Farneo and Kida (2008) illustrated when and how gestures were used in L2 instructional contexts, the frequency of occurrence of such gestures had not yet been investigated. However, Inceoglu (2015) added another layer to the existing studies by showing to what extent gestures were used during focus on form episodes (FFEs) targeting lexical items. She observed 10 hours of intermediate French as a foreign language classrooms and identified 110 FFEs and found that close to half of the FFEs were accompanied by gestures. Furthermore, gestures accompanied the majority of FFEs targeting verbs (15 out of 18) and collocations (14 out of 15), whereas the use of gestures was considerably less frequent for nouns (28 out of 71) and adjectives (2 out of 6). Inceoglu also found that iconic gestures were most frequently used during lexical FFEs. Another notable distinction that she observed was that when the FFEs were initiated by the learners, about 90% of the FFEs were accompanied by gestures, even though it was only about 50% when initiated by the teachers. Collectively, these studies indicate that language instructors often incorporate gestures with pedagogical purposes to facilitate learners' L2 understandings.

In addition to teacher's gestures, some researchers have used a sociocultural framework to examine how gestures were used between teachers and students (e.g., McCafferty & Rosborough, 2014, Smotrova & Lantolf, 2013; Smotrova, 2014). For example, Smotrova and Lantolf (2013) examined a two-hour-long video recording of an EFL classroom in Eastern Ukraine. They identified that some gestures that the instructor used to describe the meaning of a phrasal verb (e.g., [*a plane*] *takes off*) were reused when describing the same phrasal verb but in a different context (e.g., [*a train*] *takes off*). They found that these gestures were later used by the EFL learners as well and argued that the recurring images illustrated by gestures served as a reference point in verbal utterances.

These descriptive studies are rich in nature and have demonstrated how teachers and students use gestures in language classrooms. Had the studies solely relied on the oral data, we would not have known the various functions of gestures in a language classroom: (1) introduction of a culture-specific gesture, (2) facilitating learners' understanding of important vocabulary words and phrasal verbs, and (3) impacting the student–teacher interaction negatively and positively. However, to argue for its impact on L2 learning, intervention studies, as described in the next section, are needed.

Experimental Gesture Studies in SLA

In addition to observational studies, some SLA researchers have conducted intervention studies in order to examine whether or not being exposed to gestures and/or producing appropriate gestures may facilitate L2 learning. The studies which are introduced here are not necessarily related to corrective feedback; however,

they are important studies to refer back to when we discuss the effectiveness of gestures in corrective feedback later in this chapter, because the studies illustrate whether or not exposure to gestures helps L2 learning. Specifically, studies have investigated the areas of L2 comprehension, vocabulary learning, and pronunciation learning and, as a result, researchers have identified the facilitative functions of gestures in most, but not all, pedagogical areas (e.g., Macedonia & Kliemesch, 2014; Sueyoshi & Hardison, 2005; Kelly & Lee, 2012).

When considering the effectiveness of gestures for L2 comprehension and learning, it is important to consider their compensatory nature in relation to L2 comprehension. When L2 learners' proficiency levels are not high enough or when they are listening to a conversation in a loud setting, it is natural to rely on the interlocutor's gestural cues to understand the interlocutor. Likewise, the existing studies suggest that seeing a speaker's gestures is indeed helpful for some learners (e.g., Allen, 1995; Church, Ayman-Nolley, & Mahootian, 2004; Sime, 2006; Sueyoshi & Hardison, 2005). For example, Sime (2006) observed a total of five 90-minute classes and conducted a stimulated recall session with the learners about the teachers' non-verbal behaviors. One of the major functions that the learners reported was how they actively tried to make sense of teachers' gestures, and they reported that some gestures were helpful for meaning-making. The intervention studies seem to support this argument as well. For example, Dahl and Ludvigsen (2014) conducted a study with L1 and L2 English speaking children. Half of the children in each group were given the description of a cartoon in English in a video in which the speaker's gestures were visible. The other half saw a video where gestures were invisible. After watching the video, the participants were asked to draw a picture that matched the given description. The researchers found that the presence of gestures did not affect the comprehension by L1 English speaking children; furthermore, the drawings by the L2 English speaking children were identical to those by L1 English speaking children when gestures were visible. But the pictures drawn by L2 children who did not see gestures were not as accurate as those who saw gestures. In another study, Sueyoshi and Hardison (2005) investigated whether or not low-intermediate and advanced L2 learners' comprehension benefited from seeing a speaker's facial expressions and gestures. Learners watched a video in one of three conditions: (1) audio-visual lecture with facial expressions and co-speech gestures, (2) audio-visual lecture with facial expressions only, and (3) audio-only lecture. The results obtained from the comprehension questions showed that the low-intermediate learners performed the best under the gesture and facial expressions conditions; however, the advanced learners from the facial expressions only condition received the highest score. The study indicated that non-verbal features such as gestures and facial expressions are indeed helpful for L2 comprehension. However, their effectiveness seems to depend on learners' level of proficiency.

In the domain of vocabulary teaching, it has been reported that teachers often incorporate gestures when describing the meaning of new vocabulary words and

expressions (Tellier, 2008). This seems to be in line with a teacher's use of 'foreigner talk,' which is used to aid students' comprehension (Adams, 1998). As for learning of vocabulary items, generally the studies have indicated that seeing gestures and repeating gestures facilitate the memorization of vocabulary items. Tellier (2008) investigated whether or not seeing and repeating the instructor's gestures impacted the L2 English vocabulary learning by L1 French children. She introduced eight English vocabulary items related to animals. The researcher verbally presented the first group of children with the vocabulary items using gestures and directed the children to repeat the gestures. As for the second group, she showed the pictures of the relevant animals. Her results indicated the positive impact of seeing and repeating gestures when teaching new vocabulary items. Macedonia, Müller, and Friederici (2011) and Macedonia and Khmesch (2014) conducted similar studies with adult learners. They found that learners who saw gestures were better able to retain the vocabulary items long-term. The researchers argued that being provided with the information in multiple modalities allowed the learners to remember the vocabulary items better because learners' neural networks were reinforced.

Although gestures have been found to have a facilitative effect for comprehension and vocabulary learning, researchers have not found a similar effect for gestures and pronunciation instruction, even though language instructors often incorporate gestures during pronunciation instructions (e.g., Hudson, 2011). Kelly and his colleagues have extensively investigated whether or not using gestures during phonological instruction can help L1 English speakers learn difficult phonetic systems. Their linguistic targets included contrasting long and short vowels (Hirata & Kelly, 2010; Hirata, Kelly, Huang, & Manansala, 2014), moraic and syllabic system (Kelly, Hirata, Manansala, & Huang, 2014), and single and double consonants (Kelly & Lee, 2012). Kelly and Lee (2012), for example, examined if seeing gestures during pronunciation instructions can help learners distinguish short and long vowels in Japanese. A total of 60 learners viewed one of the four following videos: (a) audio only; (b) audio and mouth movement; (c) audio and gesture that indicated the sound pattern; and (d) audio, mouth movement, and gestures. Their results indicated that the learners who saw mouth movement surpassed the audio-only condition. However, the researchers did not find effects for the presence of gestures in developing L2 phonological awareness. Similarly, other studies also reported the lack of significance of seeing gestures in pronunciation instruction. Despite these findings, it may be premature to conclude that gestures are not helpful for pronunciation teaching. In these previous studies, the participants were not necessarily actual L2 Japanese learners. In other words, participants were not ready to distinguish these phonetic contrasts because it was the first time that they were exposed to Japanese phonology. Consequently, further studies with real L2 learners are needed to better examine the effects of gesture on pronunciation learning.

As for L2 grammar teaching, most studies are descriptive in nature except for Nakatsukasa (2016), which we introduce in a later section. The descriptive studies collectively reported that instructors used gestures and other non-verbal features such as body positioning when teaching some grammatical features such as tense and aspect (e.g., Hudson, 2011). Taking all these findings together, it appears that non-verbal features play an integral role in L2 instruction and development overall.

Although these studies have not involved corrective feedback directly, they are informative for understanding the impact of exposure to gestures on L2 learning in various linguistic domains. As a result of these studies, researchers can identify the types and uses of gestures in order to consider linking such gestures with feedback. For example, Nakatsukasa (2016) drew on descriptions of teachers' gestures pertaining to verb tense and incorporated specific gestures into a corrective feedback study.

Corrective Feedback and Gestures

Recently, researchers have begun to investigate the relationship between classroom interaction and the instructors' and students' use of non-verbal features. Some researchers have used the interactionist approach to examine how non-verbal features, including gestures, are embedded during corrective feedback episodes (Wang, 2009; Wang & Loewen, 2016) and some also investigated whether or not the presence of non-verbal features contributes to L2 development (Davies, 2006; Nakatsukasa, 2016; Wang, 2009).

Davies (2006) was one of the first studies to incorporate paralinguistic features in interaction research, when he compared the ratio of uptake in relation to the corrective feedback that incorporated paralinguistic features. Davies did not specifically define 'paralinguistic features' in his manuscript; however, the results showed that corrective feedback which was provided purely paralinguistically resulted in 100% successful uptake. Furthermore, the ratio of learner uptake was substantially higher when following feedback that incorporated paralinguistic features compared to feedback that did not involve any paralinguistic features.

In a more detailed study based on Wang's (2009) dissertation data, Wang and Loewen (2016) took a further step in identifying and describing the ways in which English L2 teachers used non-verbal features during the provision of corrective feedback. The researchers observed and video-recorded 65 hours of classroom interaction from nine different classes at an English language center in North America. From the video recordings, the researchers used McNeill's (1992) framework to identify various gestural cues (iconics, metaphorics, and beats) and also non-gestural cues (e.g., head movements, affect displays, kinetographs) that accompanied corrective feedback. Results of the analysis indicated that, on average, 60% of teachers' corrective feedback was accompanied by non-verbal behavior; however, teachers varied considerably in their use, ranging from 43% to 85%. As for the types of non-verbal behavior, Wang and Loewen found that head movements were most frequent (32%), followed by deictics (27%), iconics

(12%), and beats (11%). Affect displays, kinetographs, and emblems accounted for the remaining non-verbal behaviors. In terms of head movements, there were two different types: nodding and shaking. Example 1 (Wang & Loewen, 2016, p. 8) illustrates both of these behaviors, with the teacher shaking her head when she provides an explicit evaluation of the student's incorrect utterance and then nodding when she provides the correct form.

Example 1

Mato:	Is it rain tomorrow?
T:	Is it rain tomorrow? Your grammar [is not good]. Is it-
	Shakes head
Nass:	Is it may?
T:	Future future future
Mato:	Is it going to rain tomorrow?
T:	Is it [going to rain tomorrow]? Future, be going to. Is it going to rain tomorrow
	Nods

Note: Transcription key

Italicizing	Description of non-verbal behavior
[	Onset of non-verbal behavior
]	Offset of non-verbal behavior
RPF	Right pointing finger

In terms of deictics, the second most frequent non-verbal behavior to accompany feedback, there were also two main types: pointing at an artifact and pointing at a person. In the first instance, the teachers used non-verbal behavior to indicate an object, such as a blackboard or textbook, that might be helpful in correcting the learners' errors. In the second case, deictics were used to point at individuals, either to nominate them to respond to the discourse in some way or to "increas[e] the chances that a specific student might notice the correction provided" (p. 16). Example 2 illustrates this latter function, with the teacher pointing at herself and then the student to emphasize that it is the teacher, not the student, who may use an imperative verb in a pragmatically appropriate manner.

Example 2

Bia:	Tell me the homework.
T:	Just tell me the homework? Not if you want to be polite. Like [I] can say to
	RPF points to self
	[you] tell me the homework. You can't say to me tell me the homework.
	RPF points at Bia
Bia:	(Writes in book)

Wang and Loewen conclude that due to the pervasiveness of non-verbal behavior during feedback, it is important to gain a better understanding of how teachers use non-verbal behavior and, perhaps more importantly, its potential impact on L2 development.

To the best of our knowledge, there have not been many studies which have examined the effectiveness of gestures used during corrective feedback. Two exceptions are Wang (2009), who used individualized post hoc tests to investigate the effects of non-verbal behavior during naturally occurring classroom feedback, and Nakatsukasa (2016), who conducted a quasi-experimental study of gestures and corrective feedback.

In a non-interventionist study, Wang (2009) compared the effects of verbal and non-verbal corrective feedback on L2 development. Using the feedback episodes from the 65 hours of classroom interaction that were also analyzed in Wang and Loewen (2015), she administered tailor-made, individualized post hoc tests to the students who had been the recipients of corrective feedback. Overall, students had an accuracy rate of 59% on the immediate posttest and 47% on a delayed posttest two weeks later. When non-verbal behavior accompanied the verbal feedback, student accuracy was 73% and 61% on the immediate and delayed posttests, respectively; however, when non-verbal feedback was not included, the accuracy rates were statistically lower at 56% and 47%. Based on these results, Wang argues that non-verbal behavior can enhance the effectiveness of verbal feedback, and she calls for additional studies, both descriptive and quasi-experimental, to further explore these effects.

One study that has responded to this call is Nakatsukasa (2016), who examined whether instructors' recasts accompanied by gestures illustrating English locative prepositions affected learners' subsequent spontaneous oral production of the target structure. One group of ESL students received verbal recasts with gestures during 30 minutes of communicative tasks that were designed to elicit locative prepositions. The second group also received verbal recasts, but without gestures, and the third group received no feedback. Her results showed that the groups who received recasts regardless of the presence of gestures improved equally in the immediate posttest, whereas the no feedback group did not improve. However, in the delayed posttest, only the group who received the verbal and gestural recasts maintained the development which was observed in the immediate posttest. Based on these results, it seems that seeing gestures during corrective feedback improved the durability of the learners' gains in knowledge.

These studies indicate that incorporating gestures and other non-verbal behaviors during corrective feedback is helpful for L2 development because learners are better able to understand the linguistic target of feedback and because learning is better retained. These findings call for further studies to understand what kind of linguistic structures or what types of non-verbal behavior benefit L2 development.

Uptake and Gestures

Uptake has been described as the student's discoursal response that follows corrective feedback (e.g., Loewen, 2004; Lyster & Ranta, 1997). As such, it is an optional move; students are not obligated to respond to corrective feedback. Furthermore, sometimes students do not have the opportunity to verbally respond to feedback because the teacher continues to hold the floor after the provision of feedback and it would be conversationally inappropriate for the student to respond to the teacher. In terms of verbal responses, learners have several options. Learners may simply repeat the incorrect utterance, without modifying their output. Alternatively, learners may acknowledge the feedback with an ambiguous token such as *yeah* or *okay*, in which case it is difficult to know if the learner is acknowledging the semantic content of the teacher's feedback or if they are acknowledging the corrective intent. Finally, learners can successfully incorporate the correct linguistic form into their production, in an instance of successful uptake.

Until recently, all studies of corrective feedback that have investigated uptake have examined it verbally. Any non-verbal responses have not been documented, even though it is possible that learners might respond non-verbally. However, Wang (2009) examined the occurrence of verbal and non-verbal uptake. Specifically, she noted if a learner's verbal response to feedback was accompanied by a gesture or nodding of the head. Additionally, she noted if such non-verbal behavior occurred without any verbal expression. In coding the successfulness of the uptake, she took into account the non-verbal response. Thus, if a learner responded with a gesture that indicated their understanding of the feedback, it was coded as successful uptake. If a learner nodded without responding verbally, this was coded as an acknowledgement and not as a lack of uptake. Wang also coded student writing as a type of non-verbal response to feedback. However, Wang did not differentiate between uptake that did or did not contain non-verbal behavior, so it is not possible to know how much student uptake was only verbal, was verbal accompanied by non-verbal behavior, or was non-verbal only. Yet, this study suggests the importance of incorporating non-verbal aspects in the descriptive interaction studies.

Directions for Future Studies

To sum up, the aforementioned studies have identified the following points: (1) corrective feedback helps L2 development overall; however, its effectiveness depends on the characteristics of feedback, including non-verbal features; (2) language instructors often use gestures in a classroom to facilitate L2 comprehension, particularly for the vocabulary items that the learners may not know; (3) some gestures are shared by both instructor and learners and become a part of the discourse; (4) seeing gestures seems to help L2 comprehension for beginning level learners and vocabulary learning, but not the acquisition of L2 phonology; (5) corrective feedback can include non-verbal features and when the feedback, notably recasts, is provided along with gestures, it can help learners retain their L2 development for a prolonged period; and (6) learners' response to feedback can occur gesturally.

Although the number of gestural studies in the field of SLA has been increasing, the field needs more studies to fully understand the impact of teachers' and students' gestures on L2 development. For instance, it has been reported that gestures are not helpful when used as a part of the L2 pronunciation instruction; however, none of the studies included actual L2 learners. Thus, further studies need to recruit L2 learners who are phonologically ready to be taught the problematic phonological contrasts. In addition, as mentioned earlier, there has not been a study which examined the effectiveness of gestures for teaching grammatical structures. Some observational studies have shown that the instructors indeed use gestures and other non-verbal cues when teaching tense and aspect (e.g., Hudson, 2011). Intervention studies with gesture and non-gesture conditions could help determine if the presence of gestures facilitates learners' L2 development.

Specifically with regards to corrective feedback, the field could benefit from both descriptive and intervention studies. For instance, so far very few studies have identified to what extent gestures are used when providing corrective feedback. It would be informative to identify if there are significant differences in frequency and characteristics of gestures across linguistic targets, proficiency levels, different target languages, and different regions. As for the intervention studies, so far there has only been one study which examined the effectiveness of gestures when used along with verbal corrective feedback. The possible topics for further studies include the contrast of effectiveness across different proficiency levels, the effectiveness and learners' interpretation of gesture-only feedback, and whether or not learners' production of the instructor's gestures leads to better L2 development.

Pedagogical Implications

Due to the limited number of studies, it is premature to argue that the use of gestures in a classroom is always helpful. Yet, as for the instructor's gestures with pedagogical purposes, several intervention studies have reported that seeing and repeating the matching gestures of newly introduced vocabulary items can help L2 vocabulary development. This is certainly applicable in a classroom context, especially when teaching vocabulary items related to concrete objects and actions. Furthermore, studies reported that lower-level students benefited from seeing a speaker's facial expressions and gestures in L2 comprehension. These results suggest the potential value of the active incorporation of gestures and other visual cues in a language classroom.

In terms of the use of gestures during corrective feedback, language educators may find it useful to incorporate gestures, especially when providing implicit forms of feedback such as recasts. Even when the linguistic targets are not mentioned verbally during feedback, linguistic targets can be marked implicitly via gestures, which will allow learners to be aware of the source of error without being corrected explicitly in front of the class. Also, because the instructor does not necessarily need to explain the error verbally, gesture-incorporated feedback could potentially save time in class. In addition, as the studies on vocabulary learning have collectively shown, seeing gestures appears to promote long-term retention of knowledge. Thus, learners may benefit from the gestural corrective feedback compared to when it was given verbally only. In these cases, it becomes important that the learners are aware of the meaning of gestures. Thus, it may be necessary to incorporate gestures which have been frequently used in the classroom or to explicitly tell the meaning of the gestures in advance.

Related to corrective feedback, language educators may also benefit from observing learners' gestures during and following feedback. Even if learners do not verbalize their thoughts, their gestures and other non-verbal behavior may signal what they have noticed through feedback. For example, in a situation where a student forgets to use past tense, the instructor may provide corrective feedback with a 'point-back' gesture to indicate the lack of past tense. Following this feedback, a learner may remain silent but repeat the point-back gesture, which could indicate that the learner became aware of the source of the error. Such awareness is a crucial initial step for L2 development, even if the learner is unable to or unwilling to verbally produce the correct utterance.

In summary, it is somewhat surprising that there has not been more research investigating non-verbal feedback even though there has been considerable research on corrective feedback and L2 gestures respectively. It is hoped that the current review will be an impetus for increasing our understanding of the role of gestures, either alone or accompanying verbal feedback, during focus on form in meaning-focused interaction.

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