

## **Adaptive corrective feedback in second language learning**

**Bart Penning de Vries, Catia Cucchiarini, Roeland van Hout, Helmer Strik**

### **1 Introduction**

The role of corrective feedback (CF) in second language (L2) learning has received much attention in the literature, but it is still unclear whether CF is effective. There are indications that exposure to the target language alone might not be sufficient for high-quality L2 learning (e.g. Swain, 1985), suggesting a need for CF. However, some theories claim that CF may help only for language skills that call upon off-line processing like reading and writing; marking errors and references to grammatical rules may not be directly useful in on-line processing like oral L2 learning (Sorace, 1985; Hulstijn, 2007).

### **2 Corrective feedback**

Due to the number of uncontrollable factors that influence the outcome of language learning, and the difficulty in measuring language proficiency, the effectiveness of CF has yet to be clearly established.

#### **2.1 CF in the classroom**

Various studies have indicated that, in general, teachers' CF is inconsistent, ambiguous, arbitrary, and idiosyncratic (Carroll and Swain, 1993; Iwashita, 2003; Sheen, 2004). Arguably, therefore, studies of CF seldom find positive results because "in real classrooms, students rarely get much, if any, individualized attention, and corrective feedback, if provided, is usually given ad hoc, covering a wide range of interlanguage constructions" (Han 2002: 569). In language classes, there is often not enough time for the teacher to address each error that occurs. Thus, errors are selectively corrected. As a result, classroom interaction often does not address the individual needs of language learners. Several studies, however, have found that developmental readiness (Mackey & Philp, 1998), attention, motivation, language background (Han & Selinker, 1999), education level (Bigelow et al., 2006) and proficiency level (Lyster, 2004), all influence a learner's processing of CF.

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B. Penning de Vries  
Department of Linguistics, Radboud University, Nijmegen  
B.Penningdevries@let.ru.nl

C. Cucchiarini  
Centre for Language and Speech Technology (CLST), Radboud University, Nijmegen  
C.Cucchiarini@let.ru.nl

R. van Hout  
Department of Linguistics, Radboud University, Nijmegen  
R.vanhout@let.ru.nl

H. Strik  
Centre for Language and Speech Technology (CLST), Radboud University, Nijmegen  
H.Strik@let.ru.nl

## 2.2 Types of feedback

Corrective feedback can be provided in many different ways, for instance through recasts, which are implicit and are defined as reformulations of the erroneous sentence minus the error(s), or through more explicit techniques such as elicitation, clarification requests, metalinguistic clues and repetitions. These do not provide correct forms, but, instead, offer learners opportunities to generate the correct forms themselves. Research on CF shows varying results as to the effectiveness of the different feedback moves. In various studies recasts have been found to be picked up selectively and differently by different learners (Han 2002). Overall, it seems that CF can be more effective if it is consistent, intensive, unambiguous, and adapted to the needs of the learner. The evidence accumulated so far suggests that it has not yet been possible to create appropriate research conditions to offer optimal CF that also takes account of learners' preferences.

## 3 The present study: CF in a CALL system

The recent emergence of Computer Assisted Language Learning (CALL) systems that make use of automatic speech recognition (ASR) offers new opportunities for providing CF on oral proficiency under (near)optimal conditions. In our research we use such a system to assess the possibilities of CF for language learning. An important innovation of our study is the use of an adaptive ASR-based CALL system for practicing and providing feedback on oral proficiency. This has several advantages. First, the learner's oral production can be assessed on-line and CF can be provided immediately. Second, all interactions between learner and system can be logged so that data on input, output and feedback are readily available for research. This allows the system to determine what is the most effective form of CF for the learner and to adapt to provide feedback accordingly. Third, if the system developed in laboratory conditions appears to be effective, this could be applied in real learning situations, as a supplement to traditional lessons.

### 3.1 Feedback moves

In our experiments with the adaptive ASR-based CALL system learners practice with exercises and receive CF in the form of (1) implicit recasts, (2) explicit recasts, and (3) prompts. These three feedback moves are initially presented in a random order. Since several studies found that the form of feedback has a selective impact on learning, we try to optimize the provision of CF. The system adapts itself to the learner and the feedback moves that appear(s) to be the most effective by evaluating the learner's output.

### 3.2 Experiments

Our experiments are focused on grammatical oral proficiency (on-line processing). A well-known syntactic phenomenon that is problematic for L2 learners of Dutch is Verb Second (V2). Dutch requires subject-verb inversion given an adverbial phrase in sentence initial position (VSO), but many learners construct an SVO clause. To measure the effect of CF we examine the learners' responses to the various feedback moves in the individual V2 exercises. In addition, to establish whether the effect of uptake is volatile and disappears over time or, alternatively, whether it holds and might be conducive to actual learning, all subjects will be post-tested immediately after the training, and after a period of two weeks. The aim is to determine whether automatically generated CF forms that lead to immediate uptake also lead to language development in the long term when CF is adapted to the learner and is provided in a systematic, consistent and intensive way.

### 3.3 Interdisciplinary approach

Developing the proper adaptive ASR-based CALL system for conducting these experiments requires an interdisciplinary approach. In our research, knowledge from the field of pedagogy, teaching Dutch as a second language, research methodology, and speech technology is combined in an attempt to increase our understanding of the role of CF in L2 learning and of the effectiveness of adaptive CALL systems.

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