

Does Negative Feedback Have an Effect on Language Acquisition?

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1. Introduction

One of the central philosophical tenets of generative grammar is that children acquire their mother tongue in spite of severe limitations in their linguistic environment. This is known as the Poverty of Stimulus argument (POS). Various aspects of the POS have been questioned over the last few years (e.g., Pullum and Scholz 2002) thereby challenging nativism in favour of a more data based approach to language learning. One of those challenges concerns negative feedback, the absence of which is part of the POS argument. Indeed, a few researchers have argued that children may benefit from contrastive negative feedback to correct their early non-target productions (e.g., Child: I *go [+past] to school. Parent: You WENT to school, e.g., Saxton 1997, 2000; Saxton *et al.* 1998; Clark and Chouinard 2000; Chouinard and Clark 2003).

Several terms are used in the literature to describe the information given to children with respect to the ungrammaticality of their utterances: negative feedback, negative evidence, negative input, and corrective input. Which are sometimes used as synonyms (e.g., in Marcus 1993, negative evidence is sometimes equivalent to negative feedback). In some case, however, a distinction is made between these terms, as in Saxton (2000) where a tripartite distinction between negative evidence, negative feedback and negative input is proposed. The term *negative evidence* is used to denote corrective input that is provided immediately after a child's grammatical error in the form of a correct alternative to this error. *Negative feedback* corresponds to a non-specific signal about ungrammaticality of the child utterance (e.g., clarification question). The term *negative input* is used as "a generic term to denote any kind of adult

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response, contingent on child grammatical error, which embodies information conducive to the realignment of an overgeneralized grammar” (Saxton 1997: 140). In our study we define **negative feedback** as an adult (usually parental) response to a child’s utterance that provides (explicit or implicit) negative evidence about its ungrammaticality. For example, (1) illustrates a case of negative evidence in which a Russian-speaking mother corrects a child’s erroneous utterance (**dostavaet* ‘she gets out’), by providing the appropriate form of the 3sg/pres. verb (*dostaet*), thus signalling to the child that the form (s)he produced is non-existent (or unconventional) in the adult grammar.

- (1) **Child:** *Mama pryamo iz rotika kostochku *dostavaet.*
 Mother directly from mouth stone-ACC. get-3SG.PRES.
 ‘Mother gets a stone out of her mouth’.
- Mother:** *Dostaet.*
 Get-3SG.PRES.
 ‘(She) gets (it) out’.

One of the important questions discussed in studies on negative feedback concerns the actual availability of negative evidence to children. According to some researchers the only feedback available to children is “noisy feedback”, i.e., corrective responses that are given in response to both ungrammatical and grammatical sentences. Noisy feedback is deemed to be “inconsistent across parents, declines or disappears with age, and is probably not provided for all types of errors” (Marcus 1993: 57) as such, it is not considered helpful. At the other end of the spectrum, others have shown that children do have access to, and make use of, the negative feedback that they receive (e.g., Chouinard and Clark 2003; Saxton 2000).

The general question we address in this study is twofold: (i) does negative feedback have an effect on error elimination and, (ii) if children are found to correct their utterances following negative feedback, can we conclude without doubt that negative feedback per se is responsible for this change in behaviour? Indeed, a number of studies have shown that while parental feedback does not play a role in language acquisition (see e.g., Brown and Hanlon 1970, Braine 1971), children have internal cognitive mechanisms that help them to determine which ones among the utterances they hear are grammatical and which ones are not (Marcus 1993; Pinker 1989). This point of view supports Chomsky’s (1980) poverty of the stimulus argument.

On a different note, other researchers have found that negative feedback is helpful to the child (e.g., Saxton et al. 1998, Saxton et al. 2005). In these cases, the effect was more prominent in contexts where erroneous and correct forms were *immediately* juxtaposed or contrasted in the conversation (Saxton’s 1997 *Contrast Theory*).

- (2) **Child:** He **shooted* the fish.
Adult: He shot the fish.)

According to Chouinard and Clark (2003) the effect of reformulations (a type of negative feedback providing correction) was observed for all categories of errors including phonological (e.g., *girl *dere* rather than *girl there*), morphological (e.g., *I like *carrot* rather than *I like carrots*), lexical (e.g., *!suit* rather than *coat*) and syntactic errors (e.g., **Ø sun Ø gone* rather than *the sun is gone*).

However, one major problem with most studies on negative feedback is that they are based on longitudinal corpus data, which might result in confounds between parenting style and feedback effects in children's responses. Another problem is that they fail to answer the all-important question as to whether corrections in child speech are punctual or long-lasting in any significant way (Saxton et al. 2005).² Consequently, in order to isolate the effects of adult feedback from other potential factors influencing retreat from error, and to assess the lasting effect of negative feedback in child language correction, we decided to investigate feedback in a *controlled environment*. More precisely, we conducted a series of elicited tasks with monolingual Russian speaking children aged from 3 to 4 years at various point in time.

Specifically, we will address the following questions:

(1) Does negative feedback play a role in the acquisition of verb morphology in Russian?

(2) Does recovery from verb overregularizations depend on the type of feedback provided by adults?

Based on previous studies of negative feedback we predict that there should be a gradient effect of feedback type on verb form production: that is Correction > Clarification Question > Repetition > No Feedback (see methods below for a description of feedback types).

2. Methods

We developed an elicitation task for Russian verbs with different types of feedback with an aim to test whether they have effects on erroneous form production in Russian children. Four types of feedback were tested (see below in Procedure for examples of each type):

- 1) Correction (C);
- 2) Clarification Question (CQ);
- 3) Repetition (R);
- 4) No Feedback or Move-On (NF).

² Another drawback is that a majority of studies have focused on English-speaking children. It is a legitimate question to ask whether children learning other languages show similar acquisition patterns as a function of the language structure (see Slobin 2014 on the importance of cross-linguistic studies).

The feedback was provided by the investigators (the first author or a trained Russian research assistant) and was given in the context of contrast to errors (as defined in Saxton, 1997).

In order to verify if there was any general effect of time and maintenance on recovery from errors, the sessions were conducted according to a constant time interval: 2 weeks between sessions 1, 2 and 3 (the same time interval that was used by Morgan et al. (1995) for the time series analysis of corpus data), and a longer, 4 week, interval between sessions 3 and 4.

2.1. Participants

Seventy-six monolingual native speakers of Russian, aged from 2;11 to 3;11 participated in the study but only 35 of them (Mean age = 3;4, $SD = 0,36$) participated in all sessions. Data from these 35 children are presented here. Participants were recruited at three Moscow daycares. Both parents of all children were native Russian speakers, and the daycares were exclusively Russian speaking. Children were randomly assigned to one of four feedback groups: 1. Correction ($n = 9$), 2. Clarification question ($n = 6$), 3. Repetition ($n = 10$), and a control group 4. Without feedback ($n = 10$).

2.2. Materials

A storybook-style presentation with drawn pictures representing actions and introducing different verbs was used for the study. The drawings were specifically designed for the experiment by professional artists, and presented on a computer screen one by one with contexts describing the pictures and prompting for verb production by the participants.

2.2.1. Stimuli

12 early-acquired Russian verbs from two verb classes (6 in each, Table 1) that undergo overregularization in the non-past tense were used. Age of acquisition for all verb stimuli was controlled using data on early normal child speech development “Mishka” (the MBCDI adapted for Russian³) and corpus data from Kharchenko (2012). We used two groups of verbs: verbs with *-ova/-u-* suffixation as in *ris-ova-t* ‘to draw’ / *ris-u-j-u* ‘I am drawing’ (Class 2 verbs in Zalizniak’s, 2003, classification) and verbs with an unproductive morphonological (palatalization) alternation as in *plaka-t* ‘to cry’ / *plach-u* ‘I am crying’ (Class 6 verbs according to Zalizniak 2003). For example, children frequently produce errors such as **ris-ovaj-u* instead of *risuj-u* ‘I am drawing’, or **plakaj-u* instead of *plach-u* ‘I am crying’, therefore applying the pattern of

³ The Russian version of the MacArthur-Bates Communicative Development Inventories (MBCDI) « Mishka » was elaborated in the Herzen State Pedagogical University of Russia, St.Petersburg (2002).

the most productive Russian verb class (e.g., *chita-t'/chitaj-u* 'to read'/'I am reading'). This pattern is known as the "j-correlation" model (Ceytlin 2009) and consists in inserting a yod /j/ in the intervocalic position at the stem/inflection boundary in the non-past forms.

Table 1. List of stimuli items

Class 2 verbs	Class 6 verbs
<i>davat</i> 'to give'	<i>plakat</i> 'to cry'
<i>celovat</i> 'to kiss'	<i>iskat</i> 'to seek'
<i>vstavat</i> 'to stand up'	<i>prjatat</i> 'to hide'
<i>risovat</i> 'to draw'	<i>skakat</i> 'to ride'
<i>tancevat</i> 'to dance'	<i>rezat</i> 'to cut'
<i>dostavat</i> 'to get'	<i>mahat</i> 'to wave'

2.3. Procedure

The children participated in four short elicitation tasks. The interviews were conducted in a comfortable isolated room at the daycare, and usually lasted no longer than 5 minutes for each participant. The child was presented with pictures from the storybook-style presentation (see Figure 1) and then asked to produce the non-past (present) form of the verbs (e.g., *What is he (she) doing?*). The experiment was repeated with two-week time interval between the first three sessions, and a four-week interval between sessions 3 and 4.



Figure 1. Drawings for *plakat* 'to cry' and *risovat* 'to draw'

In each group of participants the investigator's feedback was provided in different way. For example, in the Correction group the conversation was constructed as follow:

- (3) **Adult:** *Chto delaet etot mal'chik?*
 What do-3SG-PRES this boy
 'What is this boy doing?'

Child: *On *risovaet.*
He draw-3Sg-PRES.
‘He is drawing’.

Adult: *Ne *risovaet, a risuet.*
NOT draw-3Sg-PRES but draw-3Sg-PRES.
‘Not drawing (OR), but drawing’.

In the Clarification question group, overregularizations (OR) were followed by the question *What?* or *What is s/he doing?* and in the Repetition group the investigator repeated the child’s erroneous form⁴. Children of the fourth control group did not receive any feedback, i.e., in case of an error the investigator just moved on to the next image without any reaction.

3. Results

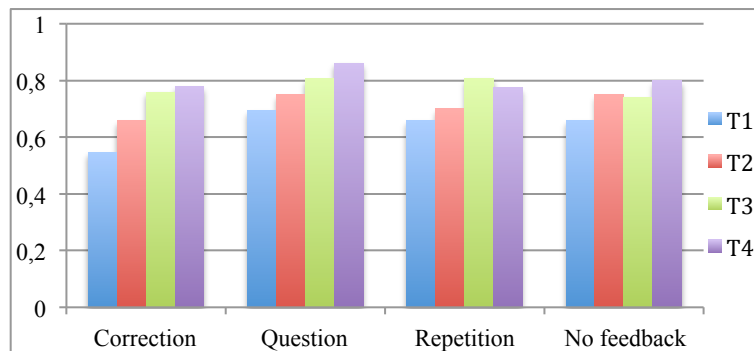


Figure 2. Percent correct verb form production in groups with different feedback types (for Times 1, 2, 3 and 4)

The children’s responses were coded as “target” vs. “non-target” productions. For example, for the verb *ris-ova-t* ‘to draw’ the form *risuj-et* (3sg./non-past) ‘she is drawing’ is the target form while the overregularized form **ris-ovaj-et* with the same meaning is the non-target form. Only the first response was rated. Percent correct responses was averaged for each group. The data were entered into an ANOVA analysis with FEEDBACK (C, CQ, R, NF) as a

⁴ The idea to repeat an erroneous form comes from the first author’s personal observations on phonological error feedback, where children try to correct errors repeated by the adult. By choosing this type of feedback we wanted to verify whether the child considers overregularized forms as errors when they are repeated by someone else. If so, children should try to correct the erroneous form, if not – the repeated form could reinforce the overregularized form, which may influence results. However, our results show that both correct and overregularized forms seem to be equally good for the child (which is also claimed in Saxton et al. 2005)

between-group factor and TESTING TIME (T1, T2, T3 and T4) as a within-group factor. An alpha of 0.05 was used to determine significance for all statistical tests. The results show a significant effect of TESTING TIME, $F(3, 31) = 19.41$, $p < 0.001$, and no effect of FEEDBACK, $F(1, 3) = 0.57$, $p > 0.1$. No interaction between TESTING TIME and FEEDBACK was found, $F(3,31) = 1.04$, $p > 0.1$. This is illustrated in Figure 2 where we can observe that all groups improve throughout the two months testing period, independent of feedback type.

4. Discussion

According to Clark and Chouinard (2000), Chouinard and Clark (2003), and Saxton et al. (1998, 2005) we should see improvements in verb production (i.e. fewer overregularizations) in the Correction group as compared to other groups. We also hypothesized that improvements in the Correction group should be more considerable compared with the Clarification question and Repetition groups, and even more so with the No Feedback group, due to the nature of their feedback. However, results in all four groups (including the control group, i.e. the one where children received no feedback) show no differences: *all* children performed better in verb production tasks from session to session. That is, children performed the same whether they received some type of feedback, or no feedback at all.

These results are striking given that the aforementioned studies seemed to show that corrective feedback impacts on language learning in English-speaking (and French-speaking, Chouinard and Clark 2003) children. However, this discrepancy can be explained by a number of methodological differences between our study and theirs.

In Chouinard and Clark's (2003) longitudinal study, corpus data were analyzed. More types of error were evaluated than in our study (phonological, morphological, lexical, syntactic), however, only one type of feedback (reformulation, equivalent to our Correction condition) was investigated. The authors claim that adult reformulations of child errors help identify the locus of the error as well as to contrast the error with the conventional (correct) adult form. The effect of adult reformulations was determined on the basis of children's uptake (for example, repetition or acknowledgement of the correct form) and increase in child speech grammaticality. However, Chouinard and Clark (2003) do not contrast reformulations to other types of feedback, nor to no feedback conditions. Thus their data is not inconsistent with ours. Moreover, their sample is very small (3 English-speaking and 2 French-speaking children aged from 2;0 to 4;0) and would need additional evidence before we can interpret their results as conclusive.

In Saxton's (1997) experimental study, the author compares the immediate effect of negative evidence (i.e., reformulation of the child erroneous utterance) (Adult: *What happened?* Child: *He STREEP his tummy.* Adult: *Yes, he STREPT him*) vs. positive input (Adult: *Oh look, he STREPT his tummy. Is that right? Tell the dragon what happened?*) on the acquisition of 6 novel irregular past

forms (e.g., *streeep/strept*, *pro/prew*, *jing/jang*, etc.). Children produced the correct irregular form as a response more often following negative evidence than when following positive input. However, the task was run over one experiment with only 6 items of varying irregularity type, and children were asked to repeat the right response. The question remains whether the effect of negative evidence is maintained over time and whether it generalized to other verbs with similar irregular patterns. Furthermore, only one measure was taken for each verb, while we tested children four times on each one, which allowed us to check for response stability.

Saxton et al. (1998) study long-term effects of negative evidence using a design similar to Saxton (1997) to evaluate the cumulative effect of feedback over a period of five weeks. Children participated in ten sessions with 3-4 days intervals for a total period of approximately one month. Results are consistent with Saxton (1997) and show that there is maintenance throughout the testing period. Both these studies raise the question of ecological validity, since the proportion of negative input exceeds levels observed in naturalistic corpora. Also negative evidence was supplied on all occasions when errors did occur, which never happens in a real life exchanges.

A more recent study by Saxton et al. (2005) increases its ecological validity and the amount of material analysed. Contrary to the previous studies where only morphological errors using nonce words were tested, eleven categories of errors were evaluated over an interval of 12 weeks in a spontaneous speech corpus with parent-child interactions. Again, no effects were found for positive input. Corrective negative input was associated with improvements in child speech grammaticality for only for three structures (the possessive pronoun, the 3rd person singular verb inflection and copula verbs). These findings lead the authors to conclude that negative input is not essential for successful language acquisition, which is consistent with our findings in that feedback type does not seem to have an impact on sub-regular and irregular Russian verb acquisition. However, the children studied in Saxton et al (2005) were much younger — with a mean age of 2 years — than those in Saxton's et al. (1998) and Saxton (1997), who were 3;8 to 4;6 and 4;9 to 5;6, respectively. It is possible that these children are not mature enough to make use of feedback provided by parents (at least for some categories of errors). Our participants were aged 3 to 4 years, but nevertheless did not show feedback differences in learning irregular verbs in Russian. We do not therefore think that age is an important factor explaining differences between our experiment and those of the aforementioned authors.

A distinct advantage of our study is that we compared four different types of feedback (not only reformulation or recast) on verb learning. In addition, ageing (i.e. normal learning over time) effects were controlled by using a group who were given no feedback. However, we could not control child's exposure to negative input outside the experiment. Further, it is possible that exposure to feedback in this study is not sufficient to promote learning. This is improbable however, as Saxton (1997) observed effects with few items and only one testing period. There might be an advantage to using novel verbs, as in Saxton's studies

(1997,1998), because by teaching children these forms, one can eliminate the possibility that previous exposure to positive and negative evidence will affect their behaviour in the experiment. On the other hand, novel forms in Saxton's study were not controlled for similarity to frequent (or less frequent) irregular patterns. These factors can promote or demote analogical learning strategies. By using real verbs, we could not control for previous exposure to verb stimuli, and negative feedback before the study, nor at same time where the experiment was conducted. However, age of acquisition for all verbs was controlled for, and children were expected to know them, in order for the task to be natural. In any case, we observe that, even if the exposure to feedback is limited, the improvements observed suggests that children recover from their overregularization errors without negative input.

5. Conclusion

In conclusion, we do not observe any significant difference between effects of negative feedback type, or even no feedback, on verb overregularization in Russian-speaking children aged 3 to 4 years old. Evidence from children acquiring Russian verb morphology shows inefficacy of negative feedback on error elimination. Children aged between 3 and 4 years get rid of errors in verb form production (related or not to "*j-correlation*" model) without corrective feedback. Our results point to the fact that general exposure to verbs (i.e., positive evidence) might be sufficient to overcome overregularization behaviour. These findings support the general hypothesis that feedback is not a strong driver of language acquisition.

More experimental studies are needed to investigate the effects of negative feedback with respect to different error categories (e.g., morphological vs. syntactic or semantic), different time intervals (e.g., 3-4 days between sessions or longer periods, such as 3-6 months) and different ages (e.g., are older children more receptive to feedback). In addition, it would be interesting to compare parental input styles and their effects on child learning.

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