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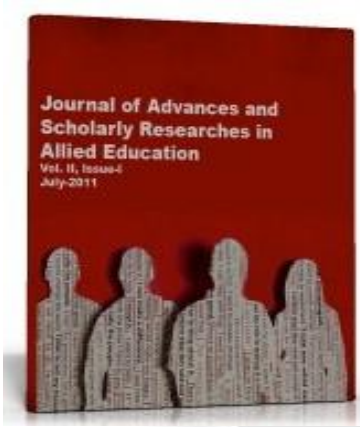
Relationship between Self-Repair and Structural Complexity of Vocal Expressions



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ABSTRACT

This study is concerned with the investigation of the relationship between the type of self-repair and the structural complexity of Vocal expressions in which they appear, focusing mainly on syntactic self-repairs. The subjects of the study were 48 students, learning English as a second language in Delhi. Specifically, this study has sought to establish a relationship between the occurrence of syntactic repairs and the complexity of syntactic structures L2 speakers use. The findings suggest that the occurrence of repairs in general (that is, without relating specific categories of repair to structural complexity) does not appear to be related to the syntactic complexity of the structures in which they occur. However, the scrutiny of the position of syntactic self-repairs is indicative of a relationship between the frequency of syntactic self-repairs and the complexity of the syntactic structures, suggesting that for those who learn English as their second language, the complexity of syntactic structures must be one, if not *the*, contributing factor

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leading to the occurrence of syntactic repairs. For other kinds of repairs, including phonological, morphological/lexical, appropriacy and information-structuring repairs, the occurrence of repairs is unrelated to syntactic complexity.

Key words: Structural complexity, self-repairs, second language learning, class room presentation.

INTRODUCTION

Self-repairs (alterations or corrections in one's spontaneous speech) have been the subject of investigation in psycholinguisticand conversational analytic studies. Through the study of self-repairs, in the former discipline, researchers have mainly tried to find out the mechanism of language production, (Van Hest 1996: 75), while in the latter, the concern has generally been with the investigation of the use of language in a social setting (Schegloff et al., 1990), or with the explication of 'syntax-for-conversation' (Schegloff, 1979: 265). Generally speaking, in psycholinguistic studies, researchers have been concerned with the study of the features of the trajectory of repair from error detection to error correction, while in conversation analysis the focus has been on the study of repair in the organisation of talk/conversation (Schegloff et al., 1977; Fox and Clark, 1997; Jasperson, 2003; Rieger, 2003; Macbeth, 2004; Bada, 2010). Specifically, in self-repair studies, researchers have focused on the self-repair behaviour of speakers and the distribution of types of repair (Levelt, 1983, 1989; Bredart, 1991; Van Hest, 1996; Kormos, 2000b), how parts of the sentence containing the trouble source are interrupted (Nooteboom, 1980; Levelt, 1983, 1989; Berg, 1986; Bredart, 1991; Blackmer and Mitton, 1991; Van Hest, 1996, 2000; Kormos, 2000b), the relationship between self-repair and language development (Verhoeven, 1989; Van Hest, 1996) or proficiency (Shonerd, 1994; Yoshida-Morise, 1998; Van Hest, 1996, 2000; Kormos, 1999b, 2000a, 2000b), the effect of social variables on self- repairs (Rogers, 1978; Fathman, 1980; Verhoeven, 1989; Van Hest, 1996;

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Kormos, 1999a; Bortfeld et al., 2001) or simply cross-linguistic comparison of self repairs (Barbara et al., 2010). While conversation analysts have considered the general conversational environment in which self-repairs occur, to the best of the researcher's knowledge, the positions in which various types of repairs occur have never been investigated. This study is a first attempt at the study of the occurrence of types of repairs in various syntactic structures in the speech of L2 speakers. In the present study, L2 speakers are those who learn English as their second language.

OBJECTIVES OF THE STUDY

Self-repair studies have been concerned with the 'how' and 'why', but not with the 'where' of self-repairs. An obvious exception is the consideration of conversation analysts of self-repairs in terms of turns speakers take to contribute to a conversation. This study is concerned with the explication of the type of environment in which syntactic self-repairs occur. In other words, the objective is to see whether the complexity of the grammatical structure plays any role in the occurrence of self-repairs in the speech of L2 speakers. The motivation for considering the position of repairs came from a four-year research project on the scrutiny of self-repairs in the speech of L2 speakers (Kazemi, 2005). In order to gain insight into the positions in which self-repairs occur, the distribution of types of repairs in various syntactic structures was investigated. The reason for attending to syntactic structures was that the investigation of the distribution of types of repairs in the speech of L2 speakers revealed that in about 40% of the total number of repairs, the focus was syntactic (Kazemi, 2005).

RESEARCH QUESTIONS

In the current study, an attempt was made to see whether the syntactic complexity of Vocal expressions has any bearing on the occurrence of repairs in general. In addition, the study aimed

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to determine whether syntactic complexity of Vocal expressions is conducive to a particular type of repair.

The design of the study subjects

The subjects were 48 students of backgrounds from Delhi, Haryana, Uttar Pradesh and Punjab attending a report- writing course in the Singhania University and were equally divided between the two sexes. For 34 of them, the medium of instruction at school had been English and the rest non-English. Their age ranged from 19 to 25 years. They were chosen from different classes with different teachers. However, all of them had passed the same courses in this program. For the design of the study, it was decided to use an authentic task to collect the data to ensure that the data are not the result of the manipulation of the task. The self-repair data were gathered from students' oral presentations, which were part of their classroom activities and on the basis of which their speaking performance was assessed. Students were audio- and/or video- recorded during a 15- to 20-min presentation.

The procedure

All the presentations were recorded onto an IBM computer. To allow a detailed transcription, a specially developed software, wavepad, was used. This digitised the recorded data, and allowed accurate analysis. Through this it is possible to observe pitches, pauses and delays, and measure durations in hundredth of a second. All the instances of self-repairs were recognised and transcribed along with the context in which they occurred. The purpose of including enough preceding and following talk was that it would allow the consideration of repairs in larger contexts, thus enabling the researcher to provide an adequate description of repairs and to appreciate the cause(s) of repair.

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Identification and classification of self-repairs

Identifying and classifying self-repairs are of special concern and of great consequence to the study of self-repairs. In order to arrive at a satisfactory classification of types of self-repairs, it was decided to begin with the data, rather than with previously established categories which had been in use for some time. This is in line with the approach adopted by conversational analysts to the study of talk-in-interaction (Sacks, as quoted in Hutchby and Wooffitt, 1998: 24; Psathas, 1995: 3). The objective was to see whether any patterns emerge from the data itself before trying to impose the traditional classifications on the data of the study. To accomplish this, all instances of self-repairs were identified in the classroom presentations of the subjects. They were transcribed in their context to allow a fuller appreciation of a given repair. This, most of the time, allowed the determination of the major focus of a repair. Based on this analysis, five categories of repairs were established, which are phonological, morphological/lexical, syntactic, appropriacy and information-structuring repairs. In the following sections major categories of repairs will be characterized. Illustrative examples will also be provided. The first category which emerged from the analysis was phonological repairs. Such repairs involve replacing one phoneme with another, adding or deleting phonemes, or changing the order of phonemes within a word (Schegloff et al., 1977). In addition, changes in stress placement at word level are also discussed under this rubric, and are considered as a kind of replacement repair. It needs to be pointed out that stress placement under discussion here is at word, and not sentence, level. In the following extract, the speaker made a phonological repair in Line 2. The repair involves a change in the pronunciation of the word 'heat':

(1) P12-E12

1. Carbon dioxide and water vapour absorbs
2. -> heat /het/-(0.1) heat /hi:t/when it is
3. Radiated from the earth's surface.

In Line 2, in the above extract, the speaker interrupted the flow of speech at the completion of

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the word and executed the proper repair. In this extract, the repair clearly involved a change in the pronunciation of a word. Repairs which involve such changes are considered phonological repairs. In the present classification, the second emerging category was that of morphological/lexical repairs. This category is intended to cover a range of changes at word or morpheme level. Such changes range from the replacement of one part of speech by another of the same word, a word by its synonym, one concept by another related concept, or one morpheme by another. Sometimes, execution of morphological/lexical repairs involves the replacement of one part of speech by another of the same word. In the following extract, the relationship between the words is that of word class.

(2) P24-E3

1. the ra- racism still ex- exists
2. in- (.) in each one of single
3. country- (0.2) each one of them
4. -> as a- (0.5) the society issue- (0.2)
5. -> social issue.

The third major category which emerged was that of syntactic repairs. Such repairs have to do with the ordering of the elements with a clausal structure. In other words, the main focus of repairs in this category is syntactic formulation, although there are a number of changes which are all associated with syntactic changes. As the term suggests, this category includes a variety of changes all centering on syntax. The following is an example of a syntactic repair. In Line 4 below, the speaker violated the subject-verb- agreement rule. She interrupted the flow of speech and replaced the auxiliary verb ‘is’ with ‘are’.

(3) P48-E11

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1. she has stressed this by- (.) u:h because
2. of the previous surveys that- (.7)* that
3. says that u:h ado- (.) the gifted
4. -> adolescents who is- (.2) who are faced
5. with more stressful events- (.9) I mean
6. who are- (.) who are faced with less
7. stressful events but still the level
8. of their stress is a lot (more)
9. than normal adolescents;

The fourth category which emerged from the data is that of context- oriented repairs, which are brought about by the demand of the context in which speech takes place. A major distinguishing feature of repairs in this category is that there is no error involved in the choice of word(s) or the formulation before repair initiation. A second distinguishing feature is that the basic meaning of the item(s), or part involved in the repair is the same. Therefore, the repair in this category is used to specify or qualify the repaired item. This category of repairs covers changes which speakers make to their speech for the sake of the particular audience involved in an interaction, or because of the spatio-temporal or discourse factors in an interaction. This type of repair is illustrated in the following extract.

(4) P11-E4

1. -> we- (.2) we can see that- (.2)
2. -> on the graph that (.6)uh (1.4) the gdp
3. has increased significantly;

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In this part of the presentation, the speaker was explaining a graph. In Lines 1 and 2 above, he inserted the phrase 'on the graph' to base the information he was presenting on the graph.

The fifth major category in the present classification covers repairs which target the way information is presented to an audience. These repairs clearly have to do with the replacement of one message with another, abandonment of a message or re- arrangement of messages.

Unlike other kinds of repairs discussed so far, this category of repairs involves changes at a higher level. In Line 3 below, the speaker abandoned what she was going to say after 'because'. She interrupted the flow of speech, provided some other information, and then resumed saying what she had abandoned. This is clearly an example which involves changes at message level.

(5) P2-E1

1 as we all know the gamblers- (0.4) the
2 GAMBlers of Macau is mainly from Hong
3 -> Kong because- (.) uh some other visitor from
4 -> Chinar because it is too close;

Identification of grammatical structures

As the occurrence of syntactic repairs was the subject of investigation, it was decided to determine the type of environment in which all the repairs occurred. As to the type of grammatical structure, four syntactic structures were chosen. These were sentences with simple, compound, embedded or complex structures.

A simple sentence is considered a sentence containing one full subject and predicate. It could take various forms, such as a statement, a question, a request or an exclamation. For example, the following sentence is considered a simple one:

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I live in Punjab.

A compound sentence contains two or more sentences joined into one by a coordinate conjunction, such as 'and', 'or', 'but', 'yet', 'so' and 'for', as in the following example:

I am a student and work with a company. An embedded sentence is considered a sentence which contains an adjective clause or a noun clause, such as the following:

I know which students are listening to me. A complex sentence contains one or more dependent clauses and a main clause: Because I wanted to continue my studies in an English-speaking community, I came to Delhi.

Relationship between self-repair and syntactic structure

To begin with, for each case of repair (out of 1085 cases), the type of syntactic structure in which they occurred was determined. Table 1 summarises the type and number of repairs in sentences with these syntactic structures. It is expected that the complexity of the syntactic structure will have a bearing on the occurrence of repairs. Specifically, the expectation is that relatively speaking, more self-repairs will occur in Vocal expressions which are syntactically complex. To verify this, all the types of syntactic structures in the speech of the subjects were counted. The total number of simple, embedded, compound, and complex sentences was 3536, out of which 42.8% were simple, 22.9% were embedded, 20.0% were compound and 14.1% were complex[1]. It could be seen that more than two-thirds of the sentences had a simple structure. In addition, speakers used complex structures less often, compared to other structures. The number of embedded and compound sentences was almost the same. In an attempt to find out how the structure of a sentence might affect the occurrence of repairs, the frequency of repairs was calculated in these sentences. It is to be noted that at this stage, no attempt was made to differentiate between different categories of repairs. Therefore, repairs were considered as a

general category. The number and percentage of repairs in each of these syntactic structures was also calculated. It became clear that out of the total number of 1085 repairs, 35.4% occurred in simple sentences, 25.7% in embedded sentences, 22.9% in compound sentences, and 15.8% in complex sentences.

Table 1. Occurrence of repairs in different syntactic structures.

Rep/str	Simple	Embedded	Compound	Complex	Total
Phonological	50	23	31	22	126
Mor/lexical	91	42	55	24	212
Syntactic	122	146	88	79	435
Appropriacy	92	59	58	35	244
Inf.structurin	31	9	17	11	68
Total	386	279	249	171	1085

REP = Repair; STR = structure; MOR = morphological; INF = information.

Table 2. Frequency of occurrence of repairs in different syntactic structures.

Rep/str	Simple	Embedded	Compoun	Complex	Total
Phonological	39.6	18.2	24.6	17.4	100
Mor/lexical	42.9	19.8	25.9	11.3	100
Syntactic	28.0	33.5	20.2	18.1	100
Appropriacy	37.7	24.1	23.7	14.3	100
Inf.structuring	45.5	13.2	25.0	16.1	100

REP = Repair; STR = structure; MOR = morphological; INF= information.

Table 3. Comparison of the frequency of repairs across different syntactic structures.

Type of structure	Observed N	Expected N	Residual

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Simple	255	323.	-
Embedded	344	323.	20.8
Compound	352	323.	28.8
Complex	342	323.	18.8
Test statistics		3	Asymp.

This means that more than 64% of repairs occur in constructions which are grammatically complex for L2 speakers. This may seem suggestive. However, as the number of simple sentences was more than other types of sentences, it is not possible to make a definitive statement about the relationship between the type of syntactic structure and the frequency of occurrence of repairs. In order to see whether occurrence of self-repairs is affected by the complexity of the syntactic structures in which they occur, it was decided to determine what percentage of Vocal expressions with the syntactic structures in question contain repairs and what percentage are repair-free. The results were that 25.4% of simple sentences, 34.4% of embedded sentences, 35.1% of compound sentences, and 34.3% of complex sentences contained some kind of repair. In other words, about 75% of simple Vocal expressions were repair-free while for complex Vocal expressions, this percentage was about 65%. It must be noted that the percentage of repair-free sentences is roughly the same across embedded, compound and complex ones. However, the numbers are very close. This could be taken to mean that in terms of the occurrence of repairs[2], there does not seem to be a difference between sentences with simple or more complex structures. This has an important methodological implication. The discussion of the relationship between the occurrence of self-repairs and the complexity of syntactic structures might be more relevant when individual categories of repairs are related to syntactic structures. In order to do this, an attempt was made to investigate the occurrence of different categories of repairs in different syntactic structures. In the following section, the occurrence of phonological, morphological/lexical, syntactic, appropriacy and information- structuring repairs will be investigated across different syntactic structures. Table 2 presents the frequency of occurrence of different categories of repairs in the

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syntactic structures in question. Is self-repair affected by the type of syntactic structure? We are not interested in the average self-repair rate, but rather the distribution of self-repair rates across different syntactic structures. We begin structures. Given the frequency of repair-free sentences in simple and more complex structures, it could be argued that self-repairs are relatively more frequent in complex structures than in simple.

Table 4. Comparison of the frequency of syntactic repairs across different syntactic structures.

Type of structure	Observed N	Expected N	Residual
Simple	81	136.0	-55.0
Embedded	180	136.0	44.0
Compound	125	136.0	-11.0
Complex	158	136.0	22.0
Test statistics	(a) =	df(3	Asymp. Sig.(

Table 5. Comparison of the frequency of phonological repairs across different syntactic structures.

Type of structure	Observed N	Expected N	Residual
Simple	33	37.5	-4.5
Embedded	29	37.5	-8.5
Compound	44	37.5	6.5
Complex	44	37.5	6.5
Test statistics	(a) =	df	Asymp. Sig.(

Table 6. Comparison of the frequency of morphological/lexical repairs across different syntactic structures.

Type of structure	Observed N	Expected N	Residua
Simple	60	59.5	0.5
Embedded	52	59.5	-7.5
Compound	78	59.5	18.5
Complex	48	59.5	-11.5
Test statistics	(a) =	df	Asymp. Sig.(

by making a hypothesis about the self-repair distribution assuming that there is no relationship between self-repair frequency and syntactic structure. On the basis of this hypothesis, we will

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expect the number of self-repairs to be evenly distributed across syntactic structures. As the number of sentences in which self-repairs occurred differed across subjects, the number of self-repairs was adjusted by the number of sentences to ensure an equal footing. Because the frequency of self-repairs across different syntactic structures was the subject of investigation, a chi-square test was used to compare different structures in terms of the frequency of occurrence of self-repairs. The results of the comparison of frequency of repairs across different syntactic structures are given in Table 3. According to this table, there is a significant difference between simple structures and more complex ones in terms of the frequency of occurrence of self-repairs. Choosing an alpha level of 0.05 and given the degree of freedom of 3, we find the corresponding value from the table for the distribution of chi-square. From the distribution of chi-square, at an alpha level of 0.05 and with 3 degrees of freedom, it becomes clear that the critical region begins with a chi- square value of 7.815. Given the chi-square value of 19.387 in the above table, it can be argued that the frequency of distribution of self-repairs is significantly different across syntactic structures. The biggest difference is between simple structures and compounds. It is necessary to note that self-repairs are considered here as a general category, without specifying the categories of repairs which have been established in this study. In order to determine whether it is the case that there is a relationship between the type of syntactic structure and the type of self-repair, it was decided to investigate the frequency of syntactic repairs per se across different syntactic structures. The results appear in Table 4. Given the chi-square value of 40.926, it is possible to conclude that in terms of syntactic repairs, subjects performed significantly differently across different syntactic structures. Considering the residual values in the first table, we can say that the real difference lies between simple structures and embedded ones. The chi-square test was repeated for other categories of repairs. First, the frequency of occurrence of phonological repairs across different syntactic structures was examined Table 5. Given that the chi-square value is 4.720, it is clear that in terms of frequency of phonological repairs, there is no significant difference between different syntactic structures. In order the compare the frequency of occurrence of

morphological/lexical repairs across different syntactic structures, the same test was used. Table 6 shows the results of this comparison. In this table, in terms of morphological/lexical repairs, there seems to be a difference between different syntactic structures. However, given the fact that the chi-square value in this case is slightly more than the critical chi-square value of 7.815, it may not be possible to make a definitive statement. The same test was repeated for appropriacy repairs. The results are given in Table 7. What is interesting to note in this table is that, in terms of appropriacy repairs, there is no significant difference between different syntactic structures. The last comparison was made between different syntactic structures in terms of information-structuring repairs. The results

Table 7. Comparison of the frequency of appropriacy repairs across different syntactic structures.

Type of structure	Observed N	Expected N	Residual
Simple	61	71.5	-10.5
Embedded	73	71.5	1.5
Compound	82	71.5	10.5
Complex	70	71.5	-1.5
Test statistics		df(3)	Asymp. Sig.(

Table 8. Comparison of the frequency of information-structuring repairs across different syntactic structures.

Type of structure	Observed N	Expected N	Residual
Simple	21	19.5	1.5
Embedded	11	19.5	-8.5
Compound	24	19.5	4.5
Complex	22	19.5	2.5
Test statistics		df(3)	Asymp. Sig.(

appear in Table 8.

Given the chi-square value of 5.179, which is well below the critical value of 7.815, it is clear that in terms of information- structuring repairs, there is no significant difference between different syntactic structures.

RESULTS AND DISCUSSION

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In this study, the objective was to gain insights into the positions in which syntactic self-repairs occur. What prompted interest in the position of syntactic self-repairs was an earlier study in which it was revealed that most of the self-repairs L2 speakers make were syntactically motivated (Kazemi, 2005). In order to analyze the behavior of L2 speakers in different syntactic structures, the frequency of repairs in different syntactic structures was first examined. In this case, self-repairs were considered as a general category without breaking them into the five major categories emerging from the close examination of the data. This made it clear that the syntactic complexity of repairs was not related to self-repair as a general category. What this revealed was that it might be more appropriate to consider the frequency of different categories of repairs in the syntactic structures in question. In order to accomplish this, the five major categories of repairs were related to different syntactic structures. The intention was to determine which syntactic structures were conducive to which type of repair, if at all. The results were that only for syntactic self-repairs was there a significant difference between different syntactic structures. Specifically, it became clear that syntactic self-repairs tend to occur in structures which are more complex. In other words, the more complex the syntactic structures were, the more likely L2 learners made syntactic repairs. In addition, it became clear that phonological, morphological/lexical, appropriacy and information-structuring repairs were not syntactically motivated. Regarding the question posed at the beginning of this paper, it could be argued that the results of this study indicate that there is a link between the frequency of self- repairs and the complexity of syntactic structure. However, this relationship was established only in case of syntactic self-repairs. In the case of other categories of repairs, there was no conclusive evidence to suggest that the frequency of phonological, morphological/lexical, appropriacy and information-structuring repairs is linked to the complexity of syntactic structure. This could be taken to imply that the results of the chi-square test which established a link between the frequency of syntactic self- repairs and the complexity of syntactic structures are valid. A considerable amount of research has gone into the causes of

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self-repairs in conversational and studies of self-repairs. In these studies, repair is generally associated with some trouble in understanding somebody or making oneself understood (White, 1997; Schegloff, 2000; Wong, 2000). These studies are generally limited to L1 speech. The findings of the present study suggest that while conveying meaning is certainly the ultimate goal of speech, for L2 speakers of the language, the form of the language should also be considered as a source of repair, given that L2 speakers are still in the process of learning a second language. The results of this study open up a related line of inquiry: If syntactic repairs tend to occur in structures which are syntactically complex, and presumably challenging for L2 speakers, then where do other types of repairs tend to occur? Doing this requires the careful study of the environments which give rise to other kinds of repairs, such as phonological, morphological/lexical, appropriacy and information-structuring repairs.

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