CHAPTER 6

RESULTS AND DISCUSSION OF SELF-REPAIRS

6.1 Introduction

This chapter looks at the second part of the first research question (see 1.5): the types of self-repairs made by speakers in relation to the categories applied by Lickley (1998; 2001) (see 4.3.2). The self-repairs were analyzed in terms of their frequency of occurrences, and how speech was interrupted preceding the repair, such as the co-occurrence of repairs with hesitation devices and whether speech was cut off as fragments. Where appropriate, the types of words being repaired, and the extent to which the repairs fitted into the structure of self-repairs (see Chapter 2) were also examined. This chapter begins with an overview of the different types of repairs found in this study, and then presents and discusses the results for each type of self-repair.

6.2 Types of Self-Repairs

Based on the definition of self-repairs given in 4.3.2, the data was examined to categorize the different types of self-repairs (deletions, insertions, substitutions and repeats) that were made. A total of 239 of these self-repairs were found in the data. Similar to Blackmer and Mitton (1991), most of the self-repairs in this study were repeats, which comprised almost half of the self-repairs (55%). The rest of the self-repairs, consisted of deletions (22%), substitutions (15%) and insertions (8%). The number of different self-repairs found is shown in Figure 6.1.

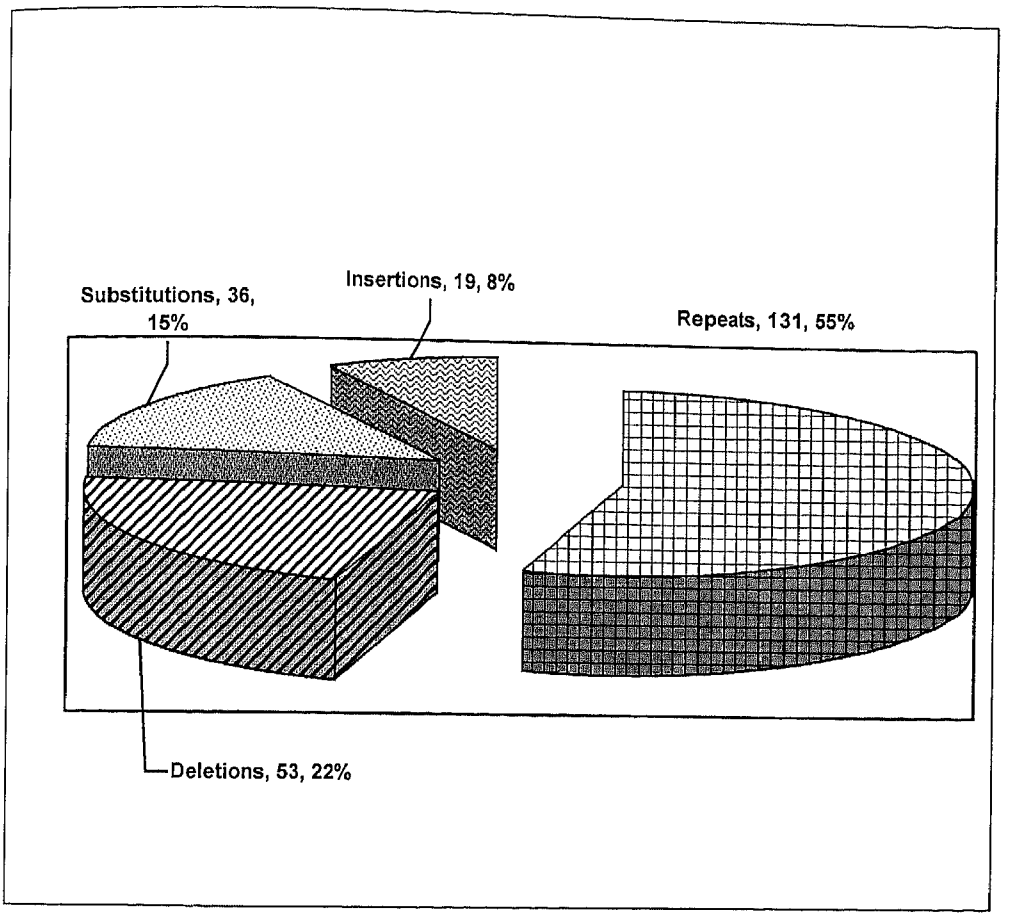

Figure 6.1

Types of Self-Repairs

Perhaps the reason that repeats are so frequently used can be attributed to their dual function as stalling devices and repairs as discussed in Chapter 2 (Hieke, 1981; Plauché and Shriberg, 1999; Shriberg 1995). This aspect of repeats will be discussed further in the following sections.

6.2.1 Repeats

A total of 131 repeats were found in the data. Repeats were easily identified because they had two or more identical items, the "repeatable element" (the token preceding the interruption point) and the "repeated element" (the token following the interruption point) (see Henry & Pallaud, 2003; Shriberg, 1999 in 2.9.2). The repeats found in the data included the following:

- 99 single-words that were repeated once, that is simple repeats (see C9 and C22) or more than once, that is, multiple repeats (see C20).

- 32 instances, where more than one word was repeated once (see C23 and C53).

The following are examples of repeats taken from the data:

C9
...*kocak* ((shake)) **[for] IP** **for**(REP) shake.

C20
...but not necessary take **[the] IP :305** [**the**(REP) **the the] IP** **the**(REP) fun out of things you know.

C22
...**[you] IP** **you**(REP) said **[you] IP** **you**(REP) wanna know about the ps and qs.

C23
[**<they> can use] IP :168** **they can use**(REP) the frame at least.

C53
<[we love woman]> IP **we love woman**(REP) without woman we can't live^

The examples show that repeats can be made up of more than one word. However, most of the instances of repeat in the data consisted of one word, with less than one third of

the repeats comprising more than one word. There was also a tendency to repeat words once, that is there were more simple rather than multiple repeats, where, only ten of the repeats were repeated more than once. Thus 92% of the repeats were simple repeats. This is consistent with Henry and Pallaud's (2003) study, where 93.8% of their repeats were found to be simple repeats (see 2.9.2.1).

An analysis of the multiple repeats found in this study reveals that all of them were one-word repeats. Another interesting finding is that it was more common to find a maximum of three words being repeated in succession. Only two of the ten multiple repeats had four words in a row being repeated. As mentioned in Chapter 2 (see 2.9.2.1), instances of such repeats were also found to be infrequent in Henry and Pallaud (2003). In multiple repeats, the last token, or the token which followed the editing phase (if any), was considered as the repair, while the token preceding the interruption point (IP) was considered as the 'error'. This is shown in the following multiple repeats from the data.

C8
< **[I I]**> **IP** **I**(REP) think the door gift.

C10
...I check **[in in] IP er :376** **in**(REP) **IP :337** Arabic dictionary.

C54
...of course **[we'll we'll we'll] IP** **we'll**(REP) talk about it but^

Blackmer & Mitton (1991) feel that such rapid successions of repeated words poses a problem with speech production models where replanning has to commence at the conceptualizer (see 3.5.2.2). This is because the time from the utterance of the repeatable element to the repeated ones tends to be short, and the explanation for this is that perhaps the articulator is able to restart production autonomously by repeating the

same word or words, without recourse to the Conceptualizer (see Figures 2.1 and 3.1) in such cases (Blackmer & Mitton, 1991; Nota & Honda, 2003). In this study the time from the first repeatable element to the beginning of the last element in multiple repeats had a mean of 613.1msec and a median of 599.5msec, with the shortest duration being 207msec and the longest being 1250msec. The implication of these intervals will be discussed in the following chapter.

Similar to other studies (see 2.9.2.1), (for example, Benkenstein & Simpson, 2003, Henry & Pallaud, 2003; Maclay & Osgood, 1959; Tseng, 2003), there were instances of the first element of the repeat being a fragment. There were 33 instances of such repeats, out of which 19 were one-word repeats, while 14 were more than one word repeats. In such cases, it is assumed, based on auditory and acoustic analysis (such as the fragment displaying coarticulatory features resembling the initial consonant and vowel phonemes in the repeated element) that the fragment comprises the first segment/s of the word being repeated. Examples of such fragment repeats are as follows.

C16
...this nasty **[g*]** IP **guest**(REP).

C18
then **[I w*] IP :90 I was**(REP) shocked you know.

C54
...she has **[s*] IP something**(REP)...

Only 9 of the fragment repairs had an editing phase, and only one of these editing phases had a filled pause. The other 8 had silent pauses. This means that in most of the fragment repairs in repeats, the repeated element or follows immediately after the

fragmented repeatable element, suggesting that the speaker is ready to resume his utterance immediately after the production of R1.

6.2.1.1 Types of Repeats

The durations of the first or R1 and second or R2 of non-fragmented or complete (see 2.9.2.1) single words that were repeated once were measured and compared. There were a total of 70 of such repeats, out of which 53 did not have any intervening silent or filled pause between them. This was done to ascertain if the repeats in this study could be categorized according to the sub-classification of repeats proposed by Plauché and Shriberg (1999) described in Chapter 2.

6.2.1.1.1 Retrospective Repeats

According to Plauché and Shriberg (1999), R1 is said to be longer in *retrospective repeats*, because the speaker is encountering a problem at this point, and is therefore hesitating by lengthening the R1. A long pause is also anticipated after R1, presumably to allow for repair-planning. In such repeats, R2 is expected to be shorter as the speaker is thought to have repaired the utterance by the time R2 is produced (see 2.9.2.1.1).

A total of 50 of the 70 (71%) non-fragmented simple one-word repeats were found to have R1s that were of longer durations than R2. Table 6.1 shows the difference between the descriptive statistics for R1 and R2, where it can be seen that R1 has a longer mean and median duration compared to R2.

Table 6.1

Descriptive Statistics for R1 and R2, where R1 is Longer than R2

	R1 (msec)	R2 (msec)
Mean	344.62	181.88
Median	335.00	177.50
Mode	181	138
Std. Deviation	183.92	76.41
Skewness	2.86	.87
Minimum	76	64
Maximum	1280	416

Figures 6.2 and 6.3 show the frequency distributions of R1 and R2, where it can be seen that the durations, especially of R1, are not normally distributed. The durations of R1 ranged from 76 to1280msec, while the durations of R2 are not as spread out, ranging from 64 to 416msec.

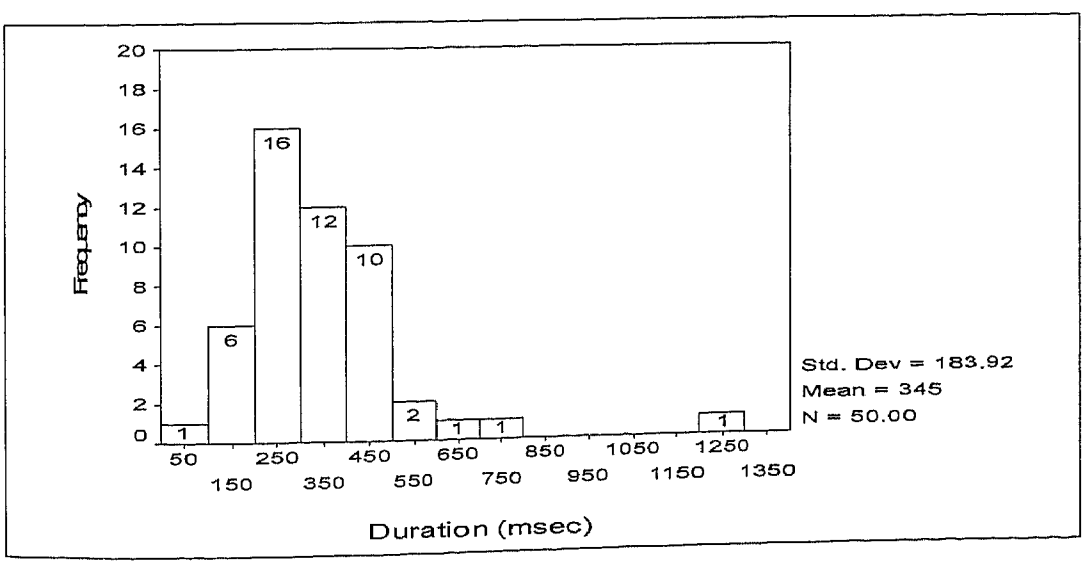

Figure 6.2

Frequency Distribution of R1, in Repeats where R1 is Longer than R2

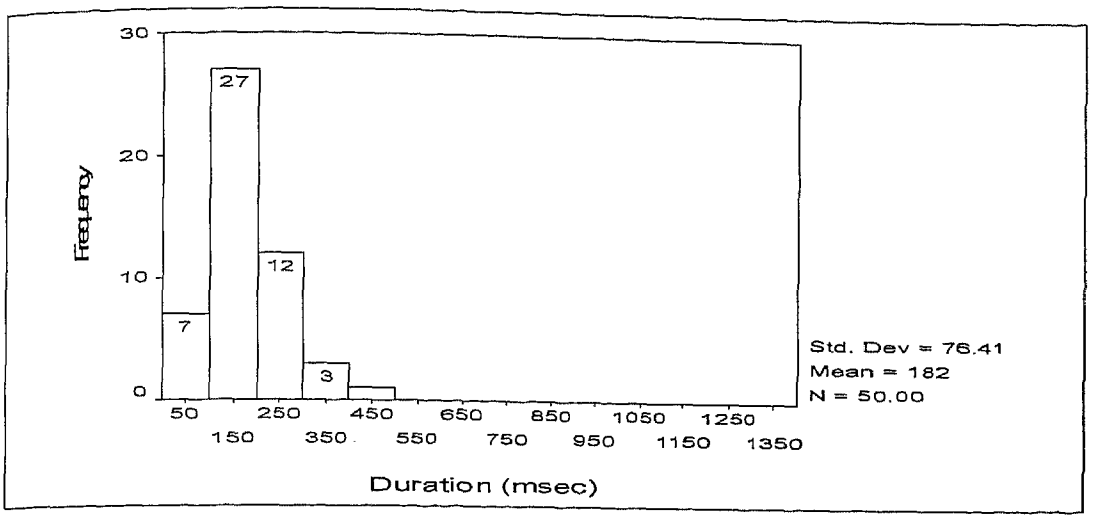

Figure 6.3

Frequency Distribution of R2, in Repeats where R1 is Longer than R2

Figure 6.4 compares the distribution of R1 and R2, from which it can be seen that the two are differently distributed. For R1, approximately half of the durations are between 230 to 410msec, while for R2 they are between 137 to 215msec, with the median for R1 being much higher than for R2.

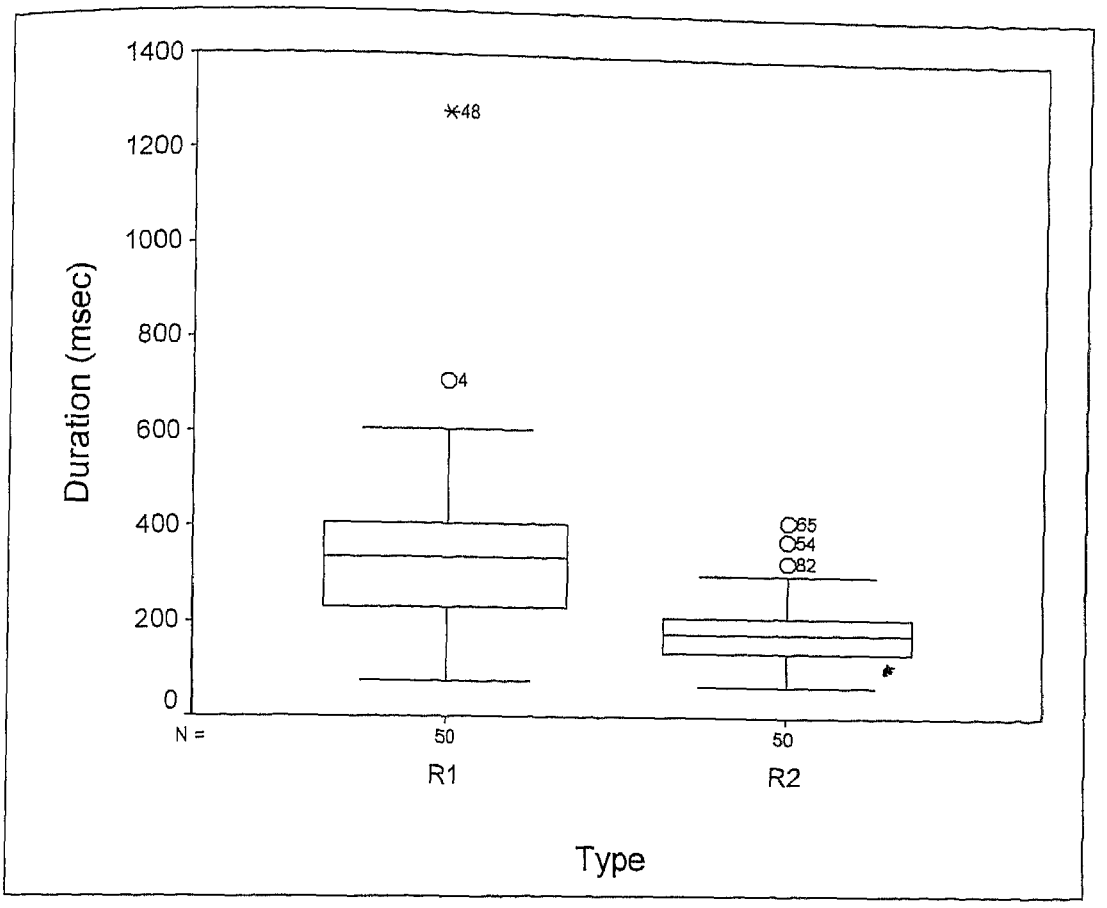

Figure 6.4

Boxplots of the Distributions of the Durations of R1 and R2, in Repeats where R1 is Longer than R2

A *Wilcoxon's Matched-Pairs Signed Rank Test* indicated that there is a significant difference between R1 and R2 (t = 11, $p < 0.05$). Similarly, a *Paired Sample T-Test* shows that the mean duration of R1 (M=345msec) is significantly longer than that of R2 (M=181msec), $t(49) = 6.97, p < .05$.

Only 3 of these repeats had a silent pause immediately preceding the R1, while another 2 of the R1s were immediately preceded by a filled pause. The use of such pauses may indicate that the problem had already been detected prior to R1. Further, only 20%

(10/50) of these repeats were found to have silent pauses after R1, while one of them had a filled pause. This suggests that although the speakers might have been hesitating at R1, perhaps because of a problem detected prior to or at the articulation of R1, in most cases, speakers did not need extra planning time, and resume immediately with R2.

Thus, the repeats with longer R1s found in the data did not necessarily have a silent pause after the R1 as suggested by Plauché and Shriberg (1999) (see Figure 2.10). If it is true that longer R1s are an indication that a problem has been detected at this stage, then the speaker must have resolved the problem before the production of R2 (as indicated by its shorter duration), using R2 to restart and resume his utterance, which ties in with the bridging function of retrospective repeats put forward by Hieke (1981).

6.2.1.1.2 Stalling Repeats

In contrast, repeats with a longer R2 are classified as *stalling repeats* (see 2.9.2.1.1). In such cases, a speaker is thought to encounter a problem during, and perhaps even after R2, which is why R2 is said to be lengthened as a stalling device (see Figure 2.10). Since the problem may not be resolved at the end of R2, more disfluencies are anticipated after R2.

Among the 70 single word repetitions that were analysed, only 18 (26%) of them had longer R2 durations. Table 6.2 presents the descriptive statistics for the durations of R1 and R2, where it can be seen that R2 has a higher mean and median duration than R1.

Table 6.2

Descriptive Statistics for R1 and R2, where R2 is Longer than R1

	R1 (msec)	R2 (msec)
Mean	170.17	365.39
Median	174.00	305.00
Mode	15	88
Std. Deviation	95.77	275.51
Skewedness	.31	1.88
Minimum	15	88
Maximum	375	1147

Figures 6.5 and 6.6 show histograms of R1 and R2. Overall, the durations for R1 were shorter than those of R2, and the durations in R2 were also distributed over a wider range, from as low as 88msec to as high as 1147msec, while R1 ranged from 15msec to 375msec. This difference in the distribution of the durations of R1 and R2 is shown in Figure 6.7.

A *Wilcoxon's Matched-Pairs Signed-Ranked Test* shows that there is a significant difference between R1 and R2 ($t = 0$, $p < 0.05$), while a *Paired Sample T-test* also indicates that the R2 (M= 365msec) is significantly longer than R1 (M=170msec), $t(17) = 3.034$, $p < .05$.

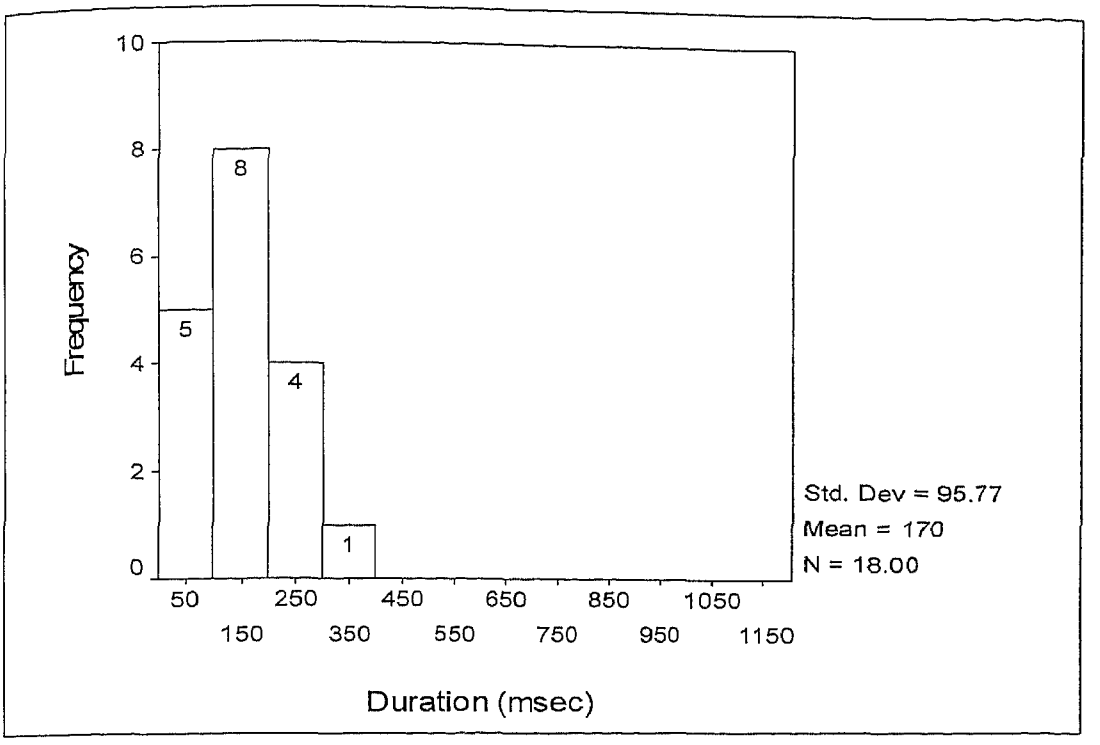

Figure 6.5

Frequency Distribution of R1, in Repeats where R2 is Longer than R1

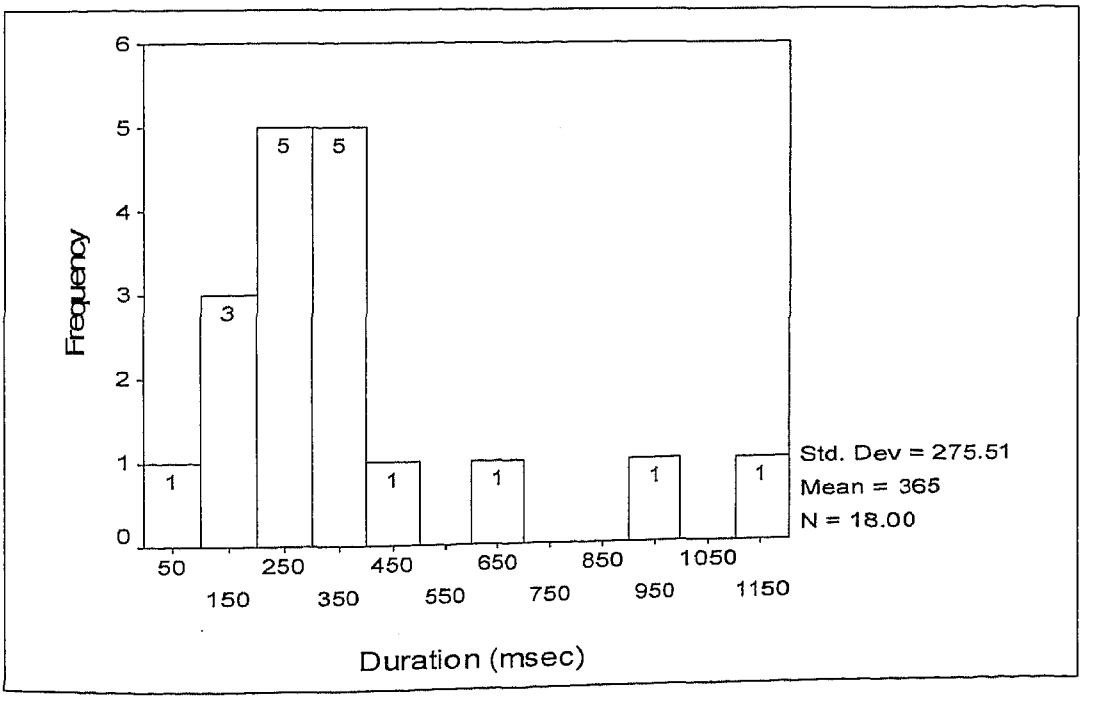

Figure 6.6

Frequency Distribution of R2, in Repeats where R2 is Longer than R1

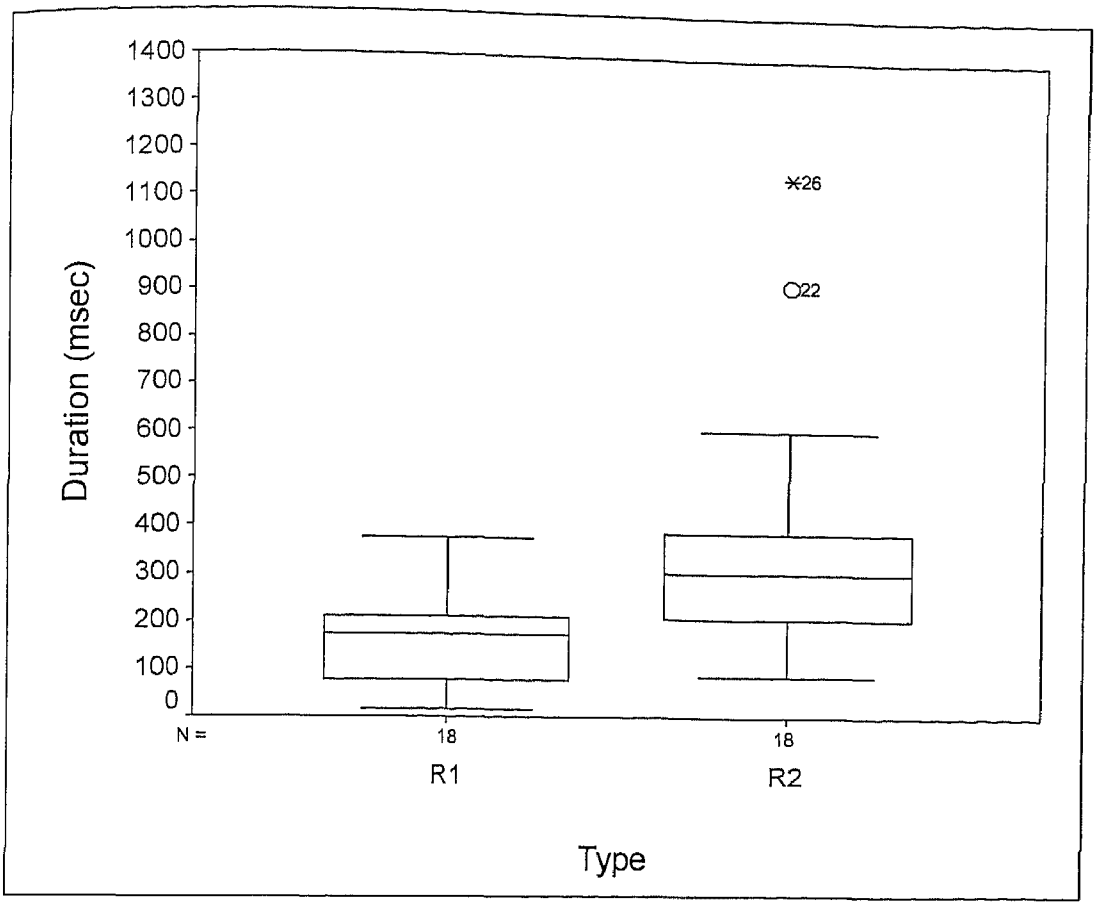

Figure 6.7

Boxplots of the Distribution of the Durations R1 and R2, where R2 is Longer than R1

As might have been anticipated, given that in stalling repeats the speaker is said to be encountering production problems at and after R2, the analysis shows that 56% (10/18) of the stalling repeats were followed by further error and self-repair as shown in the following examples:

C32
...**[he] IP [he**(REP)**] IP of course he**(INS) tried with **a: IP** key.

C49
...I don't agree you know **[that] IP that**(REP) they **say: IP you know** men are not controlled by women.

Plauché and Shriberg (1999) indicate that there could be silent pauses before and after R2. However, there were only three instances where there were pauses before R2, and two of these R2s were also followed by silent pauses as shown in the examples below:

C31
[one] IP :286 [**one**(REP)] **IP :590** **one**(REP) car^

C52
[and] IP :926 **and**(REP) **IP :280** that's it **IP :440** hundred percent.

In another two instances, there were filled pauses, rather than silent pauses before R2 as shown below:

C8
it's **[quite] IP m** < **quite**(REP)> correct.

C17
[she's] IP er **she's**(REP) consider as a regular customer <in> that time

Thus, only five R2s had any hesitation preceding it. Since there were only three such repeats with silent pauses in the editing phase, no statistical tests were carried out to compare the mean duration of these silent pauses (Mean = 506msec) and the mean duration of silent pauses found in one-word repeats with longer R1 (Mean = 425msec).

A longer R2 duration, therefore, especially if preceded by a silent or filled pause does seem to indicate that a speaker is encountering a problem after R1. The R2 acts as a stalling device (Hieke, 1981; Plauché and Shriberg, 1999; Shriberg, 1995), providing time for a repair to be made, and as evidenced from cases where there are further disfluencies following R2, attempts at repairs may not be successful.

6.2.1.1.3 Repeats as Covert Self-Repairs

Only two of the repeats had the same duration for R1 and R2, with no pause between them, which in Plauché and Shriberg's (1999) classification of disfluent repeats could be considered as a *covert repair* (2.8.2 & 2.9.2.1.1), where the speaker is deemed to have detected and repaired a problem by R2. No pauses were detected immediately before the two R1s.

Table 6.3 summarizes the findings of the 70 one-word complete repeats in relation to the types of repeats proposed by Plauché and Shriberg's (1999).

Table 6.3

Summary of Findings on Types of Repeats

Type of Repeat	Function	R1 and R2 Duration	Pauses (including filled pauses)
Retrospective	Bridging Problem detected at or before R1, resolved by R2	R1>R2 (71% of 70 repeats)	• Possible Pause before R1 (10%) • Pauses after before R1 (22% of such repeats)
Prospective	Stalling Problem detected after R1, uses R2 to stall	R2>R1 (26% of 70 repeats)	• Possible pause after R1 (28% of such repeats) • Possible pause after R2 (11%)
Covert	Begin new utterance Problem detected and resolved before R2	R1 = R2 (3% of 70 repeats)	• No Pause before R1 • No pause between R1and R2

n.b. the figures in parenthesis indicate the findings of this study

Shriberg (1995) and Plauché and Shriberg's (1999) attempts at classifying repeats have shown that different acoustic properties such as R1 and R2 duration and the presence of pauses before and after R1 and R2 can provide information about the type of prearticulatory error-detection and repair-planning that is taking place. Such information can provide insights into whether the speaker may have been encountering a problem at or before R1 or R2, and also the point at which he is ready to resume his utterance.

Thus, in cases where there were longer R1s among the 70 repeats analyses, it could be assumed that speakers had detected a problem at R1. They, therefore hesitated at R1, by prolonging it, and in a few cases hesitated further using a silent or filled pause (see Table 6.3), following which they were ready to resume their utterance by R2. Such retrospective repeats can be compared to stalling repeats, where there were longer R2s than R1s. In the latter, the assumption is that the problem was detected after R1 was articulated, resulting in speech being cut off at R1 and in some cases hesitation produced after R1, followed by a prolonged R2 (see Table 6.3). Both the hesitation and the prolonged R2 could be an indication of repair-planning. In a small number of cases (5.6%), R2 was followed by further hesitation and repairs, suggesting that the problem was not resolved by R2.

However, Shriberg's (1995) and Plauché and Shriberg's (1999) classification of repeats does not include fragmented repeats, which seem to involve another type of error-detection and repair-planning process. It was pointed out earlier that instances where the R1 (or in cases of multiple repeats, the token preceding the interruption point) was a fragment were not taken into account in analyzing the of types of repeats in the current study. However, it should be noted that in such cases, which accounted for about 25% of

the 131 repeats, the R2 was obviously longer than the fragmented token. In such fragment repeats, although, the R2 was longer by virtue of being the completed version of the word, it appears that unlike stalling repeats, the problem had been detected prior or during the articulation of R1, resulting in the abrupt cut off of the word. In 73% of the fragment repeats, there were no silent or filled pauses following the R1, which means that speech was resumed at R2. Thus, the longer R2 in these cases may be used as a stalling device only if the R2 is perceived to have a longer duration than it would in fluent contexts. Otherwise, it appears that the R2 may actually be resuming the utterance like the R2 in retrospective repeats.

Another issue that arises from Shriberg's (1995) and Plauché and Shriberg's (1999) classification is the description of covert repairs as instances where a problem is considered to have been detected, and presumed to be repaired before the articulation of R1 (see 2.9.2.1.1). Thus, there is expected to be no perceivable difference in the duration of R1 and R2. Further, no pause is expected after R1, as a speaker is able to resume his utterance at R2. Both R1 and R2 are also expected to have a rising pitch indicating a resumption of the utterance. However this analysis was not done as there were only 2 such instances in this study.

Whilst, we do not wish to dismiss the notion that such error-detection and repair-planning may be indicated by such acoustic information, the implication of only referring to such repeats as *covert self-repairs*, is that the other types of repeats are not covert self-repairs. However, if we refer to definitions of convert self-repairs by Levelt (1983) and Blackmer and Mitton (1991) presented in Chapter 2 (see 2.8.2), all repeats are in essence covert self-repairs. This is because, like other forms of covert repairs (or

as referred in this study, possible-repairs), repeats do not involve any overt changes. The only audible phenomenon is the repetition of segments or a word or words. As in other covert or possible-repairs, there is no overt evidence of 'errors' and repairs. In view of this, it is really only assumed that a problem has been detected and a repair effectuated prearticulatorily.

Thus, logically all repeats should be considered as possible manifestations of covert-repairs. This would have implications on the way that repeats fit into the structure of repairs because if they are taken as instances of possible-repairs, then the elements in repeat cannot be considered as 'errors' or 'repairs' as was previously suggested (see 2.9.2.1 & Figure 2.8). The classification of repeats into retrospective or prospective or bridging repeats and any further types of repeats, including fragment repeats, seems to be more indicative of the different points at which error-detection and repair-planning take place. This would relate to the idea that repeats act as both a hesitation and restart device. They can be prolonged to stall an utterance, acting much like silent and filled pauses. At the same time, they also have a restart capability as suggested by Blackmer and Mitton (1991), Clark and Wasow (1998), Hieke (1981) and Nota and Honda (2003).

6.2.1.2 Type of Repeated Words

An simple analysis of the 70 single words that were repeated once (excluding fragments), that is simple complete repeats, showed that only 3 of them were lexical words, while most of them were pronouns and other function words such as articles, conjunctions and prepositions. This finding that repeats mainly comprise function words is consistent with to other studies such as Benkenstein & Simpson (2003), Henry

& Pallard (2003), Lickley (1994), and Maclay & Osgood (1959). This could be because of the function of repeats as a form of hesitation. Unlike other self-repairs, the production of the repeat in itself does not involve the production or insertion or substitution of an item. The 'repair' presumably appears after R2, and similar to the findings with silent and filled pauses, tends to be produced before lexical words, reinforcing its role as a marker of hesitation.

6.2.2 Deletions

A total of 53 (23%) of the 239 self-repairs involved deletions of segments, word or words prior to the interruption point (see Figure 6.1). After repeats, this was the most frequently occurring repair. In this type of repair, speakers totally expunged items preceding the interruption point, and start anew after it. As explained in 4.3.2.2, this means that there unlike the repeats, insertions and substitutions, there is no direct relationship between the items that are deleted and those in the repair. Thus, although it can be said that the repair begins at the offset of the editing phase of the interruption point, if there is no editing phase, it is not possible to ascertain the exact part of the repair, which is why the repair for deletions is not indicated in the transcripts. All these points are illustrated in the following examples of deletions found in the data.

C2
[I'm calling from:](DEL) **IP** actually I'm driving.

C9
...because **IP er [we don't have]**(DEL) **IP er I mean [there]**(DEL) **IP[that is n*] IP <u>that is a new</u>**(INS) **concept**^

C39
I told you *kasawari* is **IP er [i*]**(DEL) **IP ah what you call that** ostrich.

As the examples above illustrate, the deleted item could constitute a fragment (C39), one word (C9) and a phrase (C2, C9). About 32% (17/53) of the deletions were one-word deletions, while about 40% (21/53) of them were phrases, out of which 9 ended in fragments. This is why such deletions are sometimes referred to as restarts or false starts (see 2.9.2.4.1). In relation to this, it was noted that nearly half of the deletions (both fragment and non-fragment) were followed by further disfluencies as shown in the following examples. This could be an indication that a more complex or perhaps longer process is required to plan the repair since the speaker has to start afresh.

C11
[ya] **IP** [no](SUB) **th*]**(DEL) **IP** [bu] **IP** but(REP) it [**wa***] **IP** [e*]((unclassifiable repair)) **IP** **everybody**(REP) stopped and then ....

C30
[w*](DEL) **IP er** [I:](DEL) **IP :802 y'know** look at this **IP er** brochure ...

A total of 45.3% (24) of deletions had some form of hesitation (see Table 5.12). The speakers mainly used filled pauses and silent pauses before deleting one or more items. The type of hesitation most commonly used on its own or with other forms of hesitation was filled pauses, which was used almost twice as many times as silent pauses. The use of hesitation in the editing phase may be related to the need for time to re-plan a new utterance following the hesitation. Silent and filled pauses can therefore buy planning time as well as allow the speakers to hold on to their speaking turn (however, see 6.2.2.1).

In 4 of the deletions the interruption point was preceded by a prolonged word. Hence, prolongations do not appear to be used commonly when items are deleted. This could be

because the decision to expunge the items, including the prolonged word has already been made, and the process of replanning is underway, probably even during the production of the to-be-deleted items. Hence, there seems little necessity to acoustically sustain an item to be deleted.

6.2.2.1 Fragment Deletions

A considerable percentage (45%) of deletion-repairs was cut off as fragments, once again suggesting prearticulatory error-detection. Approximately 28% (15/53) of the items were fragments that were deleted as shown in the following examples.. Such cases of deletions were examined to determine if there was any possibility of a phonological, syntactic or semantic relationship between the fragment and the items following the interruption point (see 4.3.2.2).

C2
[n*](DEL) **IP ahm** I'm more down to earth I would say that.

C9
ya ah **[I want t*]**(DEL) **IP** there's ...

C17
if the sky juice is got **[wat*]**(DEL) **IP ah** colour inside ...

About 71% (17/24) of these fragment repairs were not followed by an editing phase, meaning that the speakers continued their utterance immediately after they interrupted themselves mid-word or mid-segment:

C9
ya ah **[I want t*]**(DEL) **IP [there's] IP** <u>**there's**</u>(REP) a translation for **IP ah :828 ah what ah** milkshake.

C17
[we also contrib*](DEL) **IP ah** one of my friend also spit inside.

As expressed earlier in this chapter, such immediate transitions from the interruption point to the repair appear to discount the notion that the repair is planned after the interruption point.

6.2.3 Substitutions

Substitutions comprised 15% (36) of the self-repairs in this study (see Figure 6.1). The items that were substituted frequently (94%) involved one-word substitutions as can be seen in the following examples. The items to be substituted could also occur on their own or within a phrase, where the phrase would then be repeated with the word substitution (see C49 and C54). Examples of substitutions from the data are as follows:

C8
ah ikan **[*kembung*] IP** ***kembung*** ((type of fish))(REP) **[*halia*** ((ginger))**] IP** ***alim***(SUB) is it?

C31
but yet **the: IP :468 [stranger] IP** **driver**(SUB) **[wi*]**(DEL) **IP :336** never turn up you see.

C49
you know the thing is this **you [know] IP** **you see**(SUB) **IP :521 ahm** I don't <agree^>

C54
<I have been> married to her yes **[for my wife] IP** **with my wife**(SUB) thirteen years now.

In general, we would assume that most of the words that were substituted would be lexical ones because of the process of lexical selection in speech production (Garrett, 1975; Caramazza, 1997; Levelt, Roelofs and Meyer, 2001). Surprisingly only about one third of these substitutions involved lexical words. The substitution of function words in the data could be a reflection of grammatical self-correction, thus falling within what

Levelt (1983) termed as "error-repairs", particularly syntactic repairs (see 2.8.3). This higher frequency of error-repairs is therefore similar to van Hast's (1996; 1998) findings about the L2 learners in her study (see 2.10). This is because we can assume that most of the callers are not first language speakers of English since it is estimated that approximately only 2% of the population of Malaysia use English as a first language (L1) (based on 1995 population figures in Crystal, 1997, p. 58). Instead they have varying degrees of competencies in English, and mainly used the more informal spoken variety of Malaysian English (see 4.2) when speaking to the radio presenters. However, without any recourse to comparing the type of substitutions made in the speech of the same speakers, it is not possible to speculate if the higher frequency of grammatical substitutions was due to the use of English as a second or other language.

It was also interesting to note that there were no instances of Malay-English or English-Malay lexical substitutions. There were, however 3 instances of Malay-Malay substitutions and all of them occurred within the context where the presenters of the programme had asked for Malay translations of a particular word or phrase. In the following example, callers were asked for the Malay translation for the phrase *Holy Mackerel*. The caller first uses the Malay word for *ginger* before substituting it for the Malay word for *holy*.

C8
ah *ikan* ((fish)) **[*kembung*] IP** ***kembung*** ((type of fish))(REP) **[*halia*]** ((ginger)) IP ***alim*** ((holy)) (SUB)

In general, the words that were substituted tended to have some form of semantic and/or grammatical similarity as would be expected based on previous studies (see 2.9.2.3). The lexical substitutions involved making meaning clearer by making the reference

more specific, for example substituting *unit* for *golf set*, stranger for *driver and BM* for *Bahasa Malaysia*. The sets of lexical words that were substituted also all belonged to the same grammatical categories so that an adjective was always substituted with an adjective, a noun with a noun and a verb with a verb.

The same trend was observed with the 24 function words that were substituted. Among the substitutions were article-substitutions (*a* substituted with *the*), conjunction-substitutions (*and* substituted with *but*), preposition-substitutions (*in* substituted with *near*, *for* substituted with *with*), modal verb-substitutions (*shouldn't* substituted with *will*) and pronoun-substitutions (*he* substituted with *she*, *it* substituted with *she*). Most of the substitutions of function words (67%) involved pronouns, which could be due to problems associated with using the correct pronoun by non-L1 speakers of English.

Substitutions also included the replacement of four items that were interrupted mid-word or mid-segment. In such cases, the word that was cut off was assumed to be the one that is substituted, although this assumption may not necessarily be correct (see 4.3.2.3). This assumption was mainly based by examining, wherever possible, the co-articulatory features of the fragment (see 2.8.1), to determine if the fragment had particular articulatory features similar to a word (the word the speaker is thought to have cut off) that is lexically or grammatically related to the substitution. The context in which the substitution occurs was also examined to determine what word the fragment may be.

All of these fragment repairs did not have an editing phase, which means, once again, that the repair was ready upon interruption, as shown in the following examples.

C19
...I went **[ho*]**((possibly the word home)) **IP** **<u>I went to school</u>**(SUB) and when I came back^

C25
...it's a **[ba*]**((possibly the word *banned*)) **IP** **<u>it's a smuggled</u>**(SUB) one.

C50
...there's saying that **[the]** **IP** **<u>the</u>**(REP) **[w*]**((possibly wife)) **IP** **<u>husbands</u>**(SUB) is the general of the household when the wife are the major.

In another two fragment repairs, it was the word preceding the fragment that was substituted, as shown in the following examples. In such cases, it was easier to determine what the fragment word was as the fragment was repeated in the repair.

C56
...I'm thinking of **[my p*]** **IP** **<u>of our prime minister</u>**(SUB).

C66
...because when **[he s*]** **IP** **<u>she sing</u>**(SUB) the Malay songs...

Whilst there was no form of hesitation in fragmented substitution repairs, approximately 40% (12/30) of the non-fragment substitution repairs had hesitations. Most of the hesitations were silent pauses (9 occurrences) and filled pauses (7 occurrences), which occurred on their own or in combination with other forms of hesitation. Prolongation was only found in one of the substitutions used in combination with a filled pause. The ones with hesitation suggest that that error detection and repair-planning might have commenced after the production of the erroneous item, causing speech to be halted immediately after this item in most cases (69%).

6.2.4 Insertions

There were only a total of 19 insertions found in the data, making it the least used self-repair found in the data. As can be seen in the following examples, insertions typically

involved the repetition of earlier items with the new item inserted prior to the repeated ones (see 4.3.2.2). Among the insertions found in the data are as follows:

C14
...**[the] IP** **in fact the**(INS) traffic **IP :868 [was] IP er** **it was**(INS) like a bit slowlah.

C56
no but **[I'm] IP** **what I'm**(INS) saying is ...

The words that were inserted included those that were added to make the reference more specific, for example by adding *elder* before *sister*, *from* before *two thousand* and *home* before *alone*. Words were also added for emphasis such as *just*, *in fact*, *mostly*, *of course*, wow. A negative form that seemed to have been omitted was also inserted in two of the insertion repairs, as shown in the following examples (negative form in italics)

C19
...I saw this **[tank] IP ahm** ***not*** **tank**(INS)...

C47
[but we should forget] IP **but we should *not* forget**(INS) BM.

A total of 32% (6/19) of insertion repairs had fragmented cut offs, of which only two had an editing phase. In such cases, it is assumed based on auditory evidence that the fragment is repeated in the repair as shown in the following extracts:

C19
...both my **[s*] IP** **elder sisters**(INS) go to the morning session...

C26
do you mind **[let*] IP :236** **just letting**(INS) me to have a look at it?

Similar to the other repairs, such cut offs suggest that error detection is not solely reliant on the monitoring of one's overt speech. In fragment repairs, especially in those without

an editing phase, it appears to be more likely that inner or prearticulatory speech has been monitored, given that the insertions appear immediately after the cut off in all, except one of such cases.

Approximately 62% (8/13) of the non-fragment insertion repairs had an editing phase. The hesitations used were either silent pauses (4 occurrences) or filled pauses (4 occurrences). No prolongations were used in any of the insertion repairs. However, because there were only 19 of such repairs, we are hesitant to make any conclusions about the use of prolongations in insertion repairs.

6.3 Unclassifiable Repairs

In seven instances, a fragment followed the editing phase. *Such instances could not be* classified as a particular type of repair, since the repairs were unsuccessful, consequently needing to be repaired themselves, mostly in the form of repeats. These seven instances are as follows, with the fragment following the interruption point in indicated in italics:

C11
...it **[wa*] IP [*e**] IP** <u>**everybody**</u>(REP) stopped...

C17
that's mean look **[like] IP** <u>**like**</u>(REP) **IP :219** [*fo**](DEL) **IP** yellow **[w*] IP** <u>**which**</u>(REP) not **IP :246 ah what you call *this*** *properly* filtered.

C17
okay we go and contribute **[s*] IP er** [*w**] **IP** [<u>**we**</u>(REP)] **IP** <u>**I**</u>(SUB) said I would like to contribute something...

C31
push **IP :785** [*a**] **IP :73** <u>**away**</u>(REP) you see the car.

C39
I told you *kasawari* is **IP er** [*i**](DEL) **IP ah what you call that** ostrich.

C53
[y*] IP :219 [*i**] IP [it's(REP) not that we look bad] IP <it's not that we look bad(REP)

C61
[do it] IP er [*re**] IP redo(REP) it.

6.4 Summary

This chapter presented the results of the four types of self-repairs found in the data. Most of the self-repairs used were repeats, which function as hesitation devices as well as some act as a form of restart. Durational measurements of one word simple repeats showed that it was mostly (71%) the first token or R1 that was prolonged. This prolonged token acts as a stalling device while the shorter R2 indicates a resumption of the utterance, which is why these types of repeats are considered as bridging or retrospective repeats. In contrast, there were less R2s (26%) that were prolonged. Such repeats suggests that the speaker was encountering a problem at this point (R2) and perhaps even beyond as indicated by the presence of further disfluencies. Hence, such repeats are classified as stalling or prospective repeats. However, in the case of fragment repeats, where the token preceding the interruption point was a fragment, the obviously longer R2 serves to resume rather than stall speech. Given the lack of overt evidence of errors and actual repairs, all types of repeats can be considered as possible indications of prearticulatory self-monitoring and self-repair of one's own speech.

After repeats, the self-repair that was mostly found in the data was deletions. Deletions differ from the other self-repairs since there is no direct relationship between the deleted item and the items in the repair, as it involves the expunging of items in the reparandum and the production of completely new ones in the repair.

There were not as many substitutions found in the data (15%), and most of them involved the substitutions of function words, perhaps due to the use of English by non-L1 speakers. There were even fewer insertions found in the data (8%). In such cases, word/s tended to be added to make things more specific, probably with the intention of making the speaker's meaning clearer.

It is interesting to note that many of the self-repairs occurred without the use of any hesitation device. Discounting prolongations which precede the interruption point, only about 29% of the self-repairs had an editing phase. Nearly all of the prolongations preceding the interruption point occurred in repeats, strengthening the role of repeats as stalling devices. The lack of use of silent and filled pauses, means that, especially in fragment repairs, where speech is interrupted mid-utterance, repairs are ready for production soon after the error is uttered or cut off, in the case of fragments. Fragmented repairs also point to the strong possibility of prearticulatory error-detection, enabling speakers to cut themselves soon after or even in the midst of the error. This phenomenon will be explored in the following chapter.