

## CHAPTER III

### RESEARCH METHODOLOGY

This chapter describes research methodology used in the study that is relevant to pursue the aim of the study. First, it describes the research design used in the study. Second, it describes the participants involved in the study. Third, it describes the data collection including the instruments used to collect the data and the procedure of collecting the data. Last, it describes how the data were analysed in the study. All of the descriptions are followed by the justification of why the study chooses a particular participants, instruments, and method to collect and analyse the data.

#### 3.1 Research Design

The study applied a quantitative approach as the main methodology. According to Creswell (2008), a quantitative approach is a way to describe a relationship among variables. The variables investigated in the study must be clear and can be measured so that the statistical procedures can be adapted. Basically, analysis of pauses can be conducted in both quantitatively and qualitatively. However, the consideration for using quantitative, qualitative or mix-method is determined by the aim of the study. In this study, the goal is to describe the distribution of mid-pause in different narrative structure and different English proficiency. From the goal of the study, it can be noticed that there are two controlled variables which are narrative structure and English proficiency, and one dependent variable which is the distribution of mid-pause. The variables were then investigated to see to what extent the independent variables affect the dependent variable. It stands for the reason of using a quantitative approach rather than other approaches. Moreover, previous study by Tavakoli & Foster (2011) also uses a quantitative approach to analyse the variables.

#### 3.2 Participants

The study used one sample group consisting of 40 students in the English Education Department at Indonesia University of Education. The number of 40 participants is chosen because the more participants involved in the study, the better the result will be. The 40 students consisted of 16 males and 24 females, ranging between 19 and 23 years old (in June, 2016). Students from English Education Department were chosen because they were the most available subjects in the campus. Moreover, they have taken PTESOL test and already know

the score. Gender variable was not taken into account because it was out of the scope of the study. Age variable was also discarded because the study did not aim to see the development of L2 learners, but rather to investigate one specific level of speech production, which was adult speech production.

The participants were selected based on their PTESOL score, above 525. PTESOL is the abbreviation of The Proficiency Test of English for Speaker of Other Languages. The study used PTESOL score because it was the most available method provided by the university. Moreover, PTESOL score was assumed to reflect English proficiency of learners. The minimum score of 525 was chosen following the department policy. English students have to reach score of minimum 525 in order to graduate. It was based on the assumption that by scoring 525 in the test, the students have mastered the skills that were taught during the college. After that, they were divided into two groups based on their PTESOL score. The participants with score between 525 to 542 were in Intermediate group as indicated by Cambridge Institute. Meanwhile the participants with score between 543 to 626 were in Higher Intermediate group as indicated by Cambridge Institute.

### **3.3 Data collection**

The data collection is described in two separate sections. The first section explains the instruments used on the study including four picture stories, recording software on Samsung Galaxy A8, PRAAT software and SPSS software. The second section explains the procedure of collecting the data.

#### **3.3.1 Instruments**

The speeches produced by the participants were elicited using a narrating picture task. A narrating picture task has been widely used in L2 research because it is a valid pedagogic task for educational setting such as teaching, learning, and assessment purposes (Tavakoli, 2011). Moreover, it is a monologic task which allows the speakers to produce speech of stream without interruption from the others.

The picture stories that were used in the study were taken from Tavakoli & Foster (2011). The instruments have been used to analyse the output of 40 L1 speakers of English and 100 L2 learners based in London; 40 L2 learners are from various L1 backgrounds based in London, while 60 L2 learners are from a specific L1 background based in Teheran. According to Tavakoli & Foster (2011), the study shows no differences between the two

groups performance in narrating tasks. It indicates that the instruments have no effect towards specific L1 background and various L1 backgrounds.

The picture stories consist of four different stories which are Picnic and Football (Heaton, 1966), Journey (Jones, 1980) and Walkman (Swan & Walter, 1990). Each story comprises of six pictures and has different characteristics related to its structure and complexity. The structure refers to tight structure and loose structure, while the complexity refers to the absence of background information in the story. However, the focus of the study is towards narrative structure.

Narrative Complexity	Narrative Structure	
	Loose	Tight
Foreground information	Journey	Football
Foreground and Background Information	Walkman	Picnic

Table 3.1 The characteristic of instruments

The Journey has loose structure and only foregrounded events in the story. Loose structure refers to the sequence of event that is not really clear and somehow arbitrary (Tavakoli, 2009). However, the absence of background event in the story asks less explanation and thus the speakers can just describe the main event of one picture and move on to the next (Bardovi-Harlig, 1992). Speakers that perform Journey elicit a relatively low accuracy and low syntactic complexity (Tavakoli & Foster, 2011). On the other hand, the structure of Walkman is similar to Journey but it has background information in each picture in the story. It stimulates the speakers to produce more subordinate conjunction in order to connect the background information to the foreground information (Harris & Bates, 2002). Thus, speakers that perform Walkman elicit a relatively low accuracy but high syntactic complexity and fluency (Tavakoli & Foster, 2011).

The two other picture stories, Picnic and Football, both have a tight structure. Tight structure refers to the fixed sequence of events that is clear from the beginning to the end and thus speakers shift their attention into accuracy and fluency (Tavakoli, 2009). The difference between the two stories is in the absence of background; where Picnic is presenting both foreground and background information and Football is only presenting foreground information. As explained above, the presence of background information stimulates the speakers to produce more subordinate conjunction to connect it to the foreground event.

Thus, speakers that perform Picnic elicit a relatively higher accuracy and syntactic complexity; meanwhile speakers that perform Football elicit a relatively higher accuracy but low syntactic complexity (Tavakoli & Foster, 2011).

The performance of L2 learners in narrating tasks was recorded by recording software in Samsung Galaxy A8. It creates a clear recording sound with mp4 format. The sound file was then transcribed using PRAAT software. In order to be analysed by PRAAT software, the sound file should be converted into wav format. PRAAT is a computer software developed by Paul Boersma and David Weening from the Institute of Phonetic Sciences, University of Amsterdam. PRAAT has many features such as speech analysis, speech synthesis, labelling and segmentation, and speech manipulation. It shows the spectrogram, spectral slices, pitch, formant, and intensity of the sound. The study used annotation program of PRAAT to transcribe the speech produced by the participants. The annotation program identifies the silence of the speech automatically and made the transcription processes easier.

The data were then analysed by using SPSS software. SPSS is the abbreviation for Statistical Package for the Social Science. It is a computer program developed by IBM Corporation. SPSS has many features including data transformations, data examination, descriptive statistics, contingency tables, reliability tests, correlation, t-test, ANOVA, MANOVA, general linear model, regression, and many other tests provided. From various features above, the study used descriptive statistics and t-test features.

### **3.3.2 Procedure**

The data were collected in the following procedures. First, the participants were asked for their willingness to be involved in the study. Then, the researcher made a selection based on the participants PTSOL score. Fortunately, during the process of data collection, all the participants that were willing to be involved in the study already had a minimum 525 of PTSOL score. For the purpose of the study, the participants were not given the focus of the study (mid-pause) and thus they were not aware of the pause they made during the performance. Then, the participants were asked to have a look at the four picture stories and decided when they would like to do the performance. Most of them agreed to do it right when they were given the instrument. Then, the researcher asked the participants to plan and record their speech in the Self Access, class room, or other quiet place to reduce background noise. After that, the participants were asked to select any picture story that they would like to narrate first. They were given time about 5 minutes to study the picture story and to plan what

they were going to say about each picture. They were allowed to discuss the picture with the researcher and to consult a dictionary. However, they were not allowed to write what they were going to say. They were also told that the tasks were not used to evaluate their English proficiency and the transcript of their narrations would be simply described with no judgement of good or bad narration. The participants also had no time limit when narrating the story. Most of them narrated the story for 1 minute to 4 minute. Their performances were recorded by the researcher using the recorder software on Samsung Galaxy A8. After that, they were asked the similar thing for other three picture stories. Each participant had about a half hour appointment with the researcher during the data collections. The data were collected from 9 June 2016 to 20 July 2016.

There were 160 sound files taken from 40 participants. The sound files were then converted into wav file and analysed in the PRAAT software. First, the silence above 250 ms (De Jong & Bosker, 2013) was identified automatically by PRAAT. Then, the speech was segmented into clause, following Foster et al (2000). After that, the pause occurred in the middle of clauses were counted. Then, the number of pauses occurring in each speaker was divided into the duration of their speech (De Jong, 2013). After that, the data were divided into Intermediate and Higher Intermediate group based on participants' PTESOL score. Last, the data of mid-pause in three groups were presented in the Microsoft Excel in order to be inputted to SPSS program.

### **3.4 Data Analysis**

The data analysis is described in two separate sections. The first section explains the transcription processes of all four tasks, including the segmentation of speech into clauses. Meanwhile, the second section explains the analysis of mid-pause. In this study, there are two parts of data analysis which are descriptive analysis (the general tendencies and the spread of scores) and inferential statistics (paired and independent t-test). The detailed explanation is presented below.

#### **3.4.1 Transcription**

In the transcription process, the researcher used PRAAT annotation program. The software enabled us to automatically identify the silence and the sounding. The silences identified were those above 250 ms, while the sounding had no minimum duration.

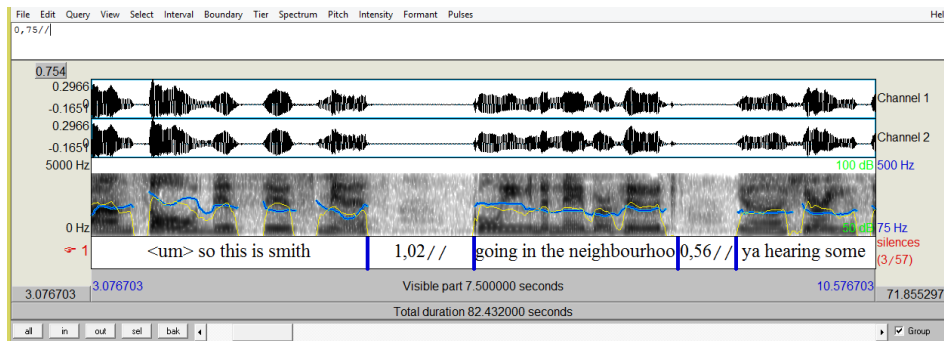


Figure 3.1 PRAAT transcription

There are several ways to segment speech data into unit of analysis that can be measured quantitatively. Analysis of young children's and aphasics's first language data was assessed in two ways. First, there are the Mean Length of Utterance (Brown, 1973) and the Mean number of Sentences per Turn of LARSP procedure (Crystal et al, 1976) to investigate speaker's productivity. Then, there are LARSP structural analysis, the Index of Productive Syntax (Scarborough, 1989) and the Type-Token ration (Wagner, 1985) to investigate speaker's complexity. Unfortunately, those measurements are difficult to be applied to L2 speaker's performance (Foster et al, 2000). Then, the focus shifts into planning process, which is the unit or chunk of spoken language within lengthy turns (ibid.). This involves macro-planning and micro-planning process (Butterworth, 1980; Garman, 1990). Macro-planning refers to the long stretches of speech while micro-planning refers to the shorter units such as clause or sentence. Proficient speakers have the ability to deliver complex message in shorter time span by dealing with more complex micro-units. Speakers with this ability are considered to be aware of syntactic requirements and constraints of speech constructions. This makes micro-planning as a base for measuring fluency, accuracy, and complexity on speakers' performances.

The micro-planning of L2 learners is identified using several approaches related to semantic units, intonational units, and syntactic units. However, the identification of micro-planning through semantic and intonational units alone is problematic. Semantic units lack reliability because the extent of an idea is never easy for the analyst to work with (Foster et al, 2000). Meanwhile, intonational units cannot be used for segmenting L2 speech and reveal not much about planning abilities and proficiency. Unlike that of previous units, syntactic units are a strong indicator of planning since pauses mostly occur at syntactic boundary. Identification of syntactic units assisted by semantic and intonational units is a perfect combination to identify planning process.

Foster et al (2000) proposed several types of clause in segmenting oral speech data. The first is an independent clause which consists of a clause including a finite verb. In the case of a coordinated verb, even when the subject is omitted in the second verb phrase, it is still considered as a new clause because it shows a fresh start for the speakers. The second is an independent sub-clausal unit, which consists of one or more phrases elaborated to a full clause (elliptical sentence) or a minor utterance (e.g. thank you, yes). This type of clause is usually occurred in interactional speech. The third is a subordinate clause which consists of a finite or non-finite verb and at least one other clause element such as subject, object, complement, or adverbial. Since the study used a monologic speech, only the first and the third types were identified in the transcripts.

In the transcript, clause boundaries were presented by double slash (//) while any pause occurred between clause boundaries were presented by a hashtag (#). It also included pause between words repeated and false start (Goldman-Eisler, 1968). In contrast, pauses that occurred at the beginning and the end of parenthetical remarks were excluded (Xhafaj, 2006). Pauses in the utterances were presented by duration of millisecond while filled pauses were presented by <aa>, <um>, and <eh>. Words that were partially uttered were presented by hyphen, for example, bas- for basket and the sce- for the scenery. Words that were unintelligible were represented by question mark in parentheses (?). Then other interruptions found in the data were presented by parentheses, for example, (clear throat) and (laugh). Repetition, reformulation, lengthening, and false start were excluded from the data.

### **3.4.2 Analysis of mid-pause**

There were several steps taken in analysing the data. Firstly, a descriptive analysis was conducted (Creswell, 2014). Descriptive analysis was conducted to describe the trends of the data, including general tendencies (mean, mode, median), the spread of scores (variance, standard deviation, and range), and a relation of one score towards all others (z scores, percentile rank). All groups, including All Participants, Intermediate, and Higher Intermediate were described separately. However, the data has to be distributed normally to be analysed further by inferential statistics. In order to see the normality of the data distribution, Kolmogorov-Smirnov test was conducted.

Secondly, an inferential statistics was conducted (Creswell, 2014). Inferential statistics was conducted to see the probability of the influence of narrative structure towards L2 output. The study used paired t-test to compare the mean score in similar group (Kranzler



& Moursund, 1999). In all groups, including All Participants, Intermediate group, and Higher Intermediate group, the mid-pause produced in narrative with loose structure was compared to narrative with tight structure. The mean comparisons were done separately. In this section, Picnic task and Football task (tight) were compared to Walkman task and Journey task (loose). Since the background variable was present in Picnic and Walkman, the investigation then separated according to the presence and the absence of the background variable. In a more detailed, Picnic was compared to Walkman because the presence of background information in both stories, while Football was compared to Journey because the absence of background information in both stories. The investigation of L2 speech performance in different narrative structure was presented in the tables.

Narrative Complexity	Task	Narrative structure	t	p
Foreground and Background	Picnic	Tight		
	Walkman	Loose		
Foreground	Football	Tight		
	Journey	Loose		

Table 3.2 All Participants (n=40)

	Narrative	Mean	SD	t	p
(+) Background	Picnic (tight)				
	Walkman (loose)				
(-) Background	Football (tight)				
	Journey (loose)				

Table 3.3 Intermediate group (<542) (n=23)

	Narrative	Mean	SD	t	p
(+) Background	Picnic (tight)				
	Walkman (Loose)				
(-) Background	Football (tight)				
	Journey (Loose)				

Table 3.4 Higher Intermediate group (>542) (n=17)



The comparison of the performance of L2 learners with different level of English proficiency was also conducted. To compare the mean score between Intermediate and Higher Intermediate group, independent t-test was conducted (Kranzler & Moursund, 1999). The comparison was aimed to see how significant their differences in the performance of all tasks.

	Intermediate	Higher Intermediate	p
Picnic			
Walkman			
Football			
Journey			

Table 3.5 Mean comparison of the two groups

After the data was measured statistically, the findings were explained and interpreted in the next chapter. The interpretation of the findings was based on cognitive perspective as explained in the literature review.