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THE INTERACTION BETWEEN LINGUISTIC PROFICIENCY
AND TEXT DIFFICULTY IN EFL READING

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ABSTRACT

The aim of this study is to investigate the role of linguistic proficiency of EFL students and the linguistic difficulty of the text on the extent to which EFL readers comprehend the text and rely on syntactic, semantic and register cues in the text. More specifically, it aims at determining the extent to which differences in the use of syntactic, semantic and register cues in the text can be attributed to differences in the language proficiency, on the one hand, and to the differences in the register complexity on the other hand, as well as to the interaction between language proficiency and register complexity. Different analyses of variance reveal that the ability to use different cues in the text is significantly related to both independent variables. The interaction between these two variables is not statistically significant. However, the scores show that an interaction may exist.

The study provides further evidence that register complexity is a part of text difficulty and it should be considered as a significant factor in any attempt at determining the difficulty of the text. Furthermore, it is found that readability formulae or traditional measures of difficulty are not adequate measures of difficulty.

Further results of the study indicate that low proficiency causes a threshold effect which blocks the transfer of good reading strategies acquired in L1 to FL reading. Yet, it is found and emphasised in the study that such an effect is not caused only by low FL proficiency, but also register complexity hampers good L1 readers' transfer of their abilities to FL reading.

As to the four way relationship between readers' FL proficiency, L1 reading skills, FL reading and text difficulty in terms of register complexity, multiple regression analyses indicate that FL proficiency is the most important factor in FL reading while L1 reading contributes to FL reading under certain circumstances. It is found that the relative importance of L1 reading skills increases only in readers whose FL proficiency has passed the threshold and also the importance of FL proficiency is not reduced after they reach such a threshold.

In other words, firstly, a crucial role is played by lower level processes and secondly, higher level processes can only be properly used when lower level processes reach a certain level. However, topic or content of the text seems to be an issue. Some evidence is provided that even in high proficiency readers, L1 reading contributes to FL reading only when the content of the text is familiar. Finally, this complex relationship is affected by register complexity of the text.

The results of different parts of this study render support to the models of proficiency and reading proposed in this study, emphasising the point that comprehension is not the result of only the information in the text, rather, there is an interaction between the content of a text and different reader variables.

DEDICATION

This thesis is dedicated to

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GLOSSARY AND ABBREVIATIONS

S   syntax

M   semantics

R   register

SL/FL   any language except the mother tongue

L1   the mother tongue or the first language (in the case of this
               study Farsi)

L2   any language except the mother tongue

ESL/EFL   English as a second language or a foreign language

Congruency   a mismatch between meaning and wording, a solitary
               relationship between wording and meaning (see chapter 2)

Incongruency   a nonsolitary relationship between meaning and syntax,
               intra-stratal tension (see chapter 2)

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CHAPTER 1

INTRODUCTION

THE STATUS OF ENGLISH LANGUAGE IN IRAN

The population of Iran has been estimated to be 64 million. About 50% of the Iranians speak Persian (Farsi) which is the only official language spoken all over the country for communication as a mother tongue. According to Country Education Profiles, "Although modern Farsi is spoken only by approximately 50 percent of the population as its mother tongue, it is the official language, and the only language of instruction except in a few higher education institutions like Shiraz University and the College of Petroleum where English is also used" (1992, p. 11). The rest speak other regional languages classified as Turkish, Kurdi, Baluchi, Gilaky, Mazandarani, Taleshi, and in some few cases Arabic and Armenian. There are some provincial dialects like Shirazi, Mashhadi, Esfahani, etc. which are used in informal occasions. As for education, Farsi and English languages are used. The foreign language which is taught in schools (some primary, all guidance and high schools) is English. Recently, French and German have been considered in the education and training ministry policy. The use of English in Iran is very limited. It is not used by the ordinary population at home or outside the home. In practice, it only plays an instrumental role in academic fields for the purposes of education. In the universities, the role of the English language is distinct from other foreign languages. Although

mostly German, French and on more limited occasions Russian, Urdu, Arabic, Armenian and Turkish are taught in the universities, English has been used as the most important foreign language for education as well as instrumental communication. Therefore, English is restricted to educational contexts and also for communication with non-speakers of Farsi.

The schooling system before 1971 consisted of two levels: 6 years of primary school and 6 years of high school. The new schooling system is an adaptation of the French education system. This new system has three levels consisting of 5 years of primary school, covering grades 1-5; 3 years of guidance school, covering grades 6-8 and 4 years of high school from grades 9-12 in government schools. English is taught as a compulsory subject from the second year of guidance school to the end of high school. Altogether, students study English for 6 years in guidance and high school for three to four hours a week before they enter the university. However, this is the policy of governmental schools. Private schools start teaching English earlier, some from primary schools. Overall, Iranian students can be considered as EFL students.

Although the official language is Farsi, the motivation for learning English is very high at present in Iran. The government also encourages learning English as a means of access to recent advances in technology and science. This is shown by the growing number of private English teaching institutions in Iran.

In some universities, English is one of the compulsory courses for all majors. The importance given to English is most marked for medicine, engineering and technology students. This is done to make the university students proficient more specifically in reading English in order to be able to read specialised textbooks. In practice, for students in the humanities, the emphasis on learning English is not as much as that for the students of the above majors.

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ENGLISH PROFICIENCY IN IRAN

Before the revolution, in a few universities in Iran like Shiraz University, more attention was paid to the English language. Most courses were taught in English, and some lecturers were native speakers of English. As a result, the level of the English of the students studying in this university was obviously higher. In most universities, English was not strongly emphasised. After the revolution, following a short period of reduction in the importance of the role of the English language in our country, the government has encouraged the development of this language and it is now used in all universities. The publication of numerous General 1 (basic English), General 2 (semi-specialised) and ESP textbooks for teaching in the universities is evidence for this claim. These books have even been used in the universities of other countries where English is a foreign language such as Lebanon, Dubai and Qatar.

Upon entering the university, every student has to take part in a placement test and then based on his/her level of English, he/she is put into one of the following courses: Pre-university, General 1, General 2, or ESP. The aim of these courses is to make them able to read in their specialised fields effectively and efficiently. In such situations, reading knowledge of English is the most important skill the students need to acquire and it is very important in their academic studies. With a few exceptions, the common characteristics of these students is that they know grammar well, but they are not able to speak English adequately since English is not spoken in the surrounding environment.

The case with Iranian students is described by a number of researchers, for example Hatch (1979), Carrell (1989a), Dubin (1982), and Eskey (1975). According to them, for the students living in countries where English is not commonly used (such as Iran) and there is limited opportunity to practice speaking English, reading is the most attainable language skill.

Learning to read English texts is the key to the knowledge and scientific advances of the world, as well as being a course requirement. Similar is Alderson's argument (1984) that reading ability is all that these students need. Therefore, reading comprehension in an EFL context is an indispensable skill for them to acquire. In 1980, the English language committee on curriculum development in Iran announced that the primary objective of language teaching at the universities in Iran was to develop reading comprehension ability. Since most scientific textbooks are published in English, there is an attempt in the universities to develop this skill.

In spite of all these efforts and emphasis on teaching reading in English and developing this skill, Iranian students, based on my experience, are not able to read English textbooks effectively. As Rowghani (1994) argues, it appears that the standards of teaching English at all levels are mixed and "the whole system consists of a series of false starts" (p. 2). As he points out, the students start learning English at guidance school and then continue it at the high school while there is an attempt to repair the shortcomings of previous years of instruction. When they enter the university, they again start learning basic structures, repeated again in their next course in English and this story is repeated again and again.

Most of the teachers' time and effort is spent in teaching grammar and vocabulary and most of the textbooks tend to focus on these two aspects of language. Eskey's contention (1973) best describes the situation, stating that ESL teaching is dominated by a "beginner's model" where language is taught through the medium of reading.

On the other hand, Cowan (1973) has found that "secondary education in Iran still emphasises rote memorisation to the detriment of learning to learn. Students expect to be tested on recall of detail, and this enforces the idea that learning constitutes obtaining the means to pass a test and gain accreditation in a subject rather than acquiring skills which can be

applied" (p. 134). Most of the students know grammatical rules very well but it is not easy for them to apply their knowledge. They know or, more accurately, memorise the meaning of words but they cannot use them or assign appropriate meaning to them when they are used in context. According to Dorry (1977), the students in Iran are "dictionary addicts" and they "seem to feel insecure unless they can translate every new word into Persian....In all, they have no reading habits" (pp. 109-110). This has also been pointed out by Cowan (1973) who has worked with these students, "translating new English words into Persian is the accepted and established method for Iranian students" (p. 136).

In addition to the above arguments, frequently stated reasons for the failure of foreign language teaching in Iran are: 1) insufficient teaching hours, 2) too many students in a class, 3) lack of motivation for learning (Sadeghian 1990). When entering the university, these students have generally had 6 years of English learning and they are expected to read well in English, but they usually are not good readers. Cowan (1973) pictures them thus: "Under entering behaviour, we can delineate certain linguistic skills that the student brings with him from secondary school. For reading, the most important are: a familiarity with the English writing system, a passive knowledge of certain grammatical rules in English, and a limited non-technical vocabulary in English" (p. 127).

The conditions of teaching English in large cities is relatively good but in smaller cities and in rural areas, it is not satisfactory. Interestingly, from my experience with the final year teacher trainees majoring in English, their level of proficiency in English and specifically reading was low. Unfortunately, no statistics are available to demonstrate and compare the amount of English knowledge of English teachers at different levels. As a result, the quality of their teaching which is offered to the students in guidance and high schools after their graduation is obviously poor. Most of the English teachers are university graduates majoring in fields other than

English teaching (TEFL), such as English translation and English literature. This problem has been highlighted by Tuers. She states that even most English majors who are going to be English teachers, use incorrect grammar, there is "a vicious circle of incorrect English, being learned and then taught over and over again.... A great deal of wrong information is given to the students because the teachers are not thoroughly acquainted with English grammar" (1973, pp. 48-9). The need for training better English teachers is emphasised by her, "no teacher should be allowed to teach English--or any other language-- unless he has a university degree in that field...." (p. 49).

Moreover, in English classes, mostly grammar is emphasised. The result is that most Iranian students are well aware of the correct grammar of the sentence, but they cannot use it appropriately on different occasions. Communicative competence is not worked on except in private English teaching institutions where they offer conversation courses. English classes in the university are often overcrowded and this prevents the teachers from working adequately with them. It seems that teaching methods and also textbooks are text-based. In reading courses, each lesson consists of a reading passage containing some grammatical points and some vocabulary which are taught and followed by a set of comprehension questions. The students are asked to learn the grammatical points as well as new vocabulary in each lesson. The students often copy the answer to the questions from the passage and no reading strategy is actively used by them.

At medical school of Shiraz University where the data of the present study were collected, the English department offers courses in English for the first year students of medicine and related fields from other faculties and the students are trained to acquire reading skills in order to read their specialised textbooks efficiently and adequately. With the exception of some students who are highly proficient in English due to their residence in foreign countries for some years, my personal experience is that the majority are not able to read well in English. As a result, they turn to translations of

their textbooks or study Farsi books on the same subject. They usually prefer to prepare themselves for exams just by using their lecture notes rather than consulting their English textbooks. This causes a passive approach in their attempt to read their English textbooks. This problem has stimulated this research in the area of the difficulties which these students might encounter in their reading in English (refer to the section about the rational of the study for more detail).

In order to help solve this problem, there is a need to understand the theoretical background to the reading process in ESL/EFL, the relationship between the factors which are involved and their interactions together with their implications for the classroom application. Most of the studies in the area of reading have been conducted in first language reading but they have been used as a framework for research about second language reading. Many second language researchers have used L1 reading theories in SL/FL reading (in Carrell, et al 1988, in Alderson and Urquehart 1984, in Mackay, et al 1979 and in Devine, et al 1987). In spite of some differences in L1 and SL/FL reading, there is much in common between the two areas. Due to the relationship between FL proficiency and FL reading, therefore, the review of literature of this study starts with theories of language and reading, then the relationship between FL proficiency and text difficulty as well as their interaction and effect on higher level skills in reading are discussed.

CHAPTER 2

THEORETICAL FRAMEWORK AND THE REVIEW OF LITERATURE

LANGUAGE PROFICIENCY: HISTORICAL OVERVIEW OF PROFICIENCY MODELS

The term "proficiency" is used for the description of target language performance of FL learners (ACTFL, 1986). It includes different skills, one of which, reading proficiency, has been under attention for many years. There is clearly a connection between the degree to which the language learners are able to read and comprehend a text and their level of proficiency in a SL/FL. Much of the interesting work in proficiency has been done by language testers. As Oller (1991) states, "the most important item on the present agenda for language testing research and development is a more adequate theoretical perspective on what language proficiency is and what sources of variance contributes to its definition...." (p. 27). The work of these researchers indicate several factors underlying proficiency tests. These factors are presented as language skills, one of which is reading comprehension skill. Although they do not explicitly show reading process, their models represent some underlying ability (knowledge) required for reading. For example, the relationship between language proficiency and reading comprehension is implied in Bachman's model. According to him, underlying all four skills is some complex ability for language and all the competencies in the model are necessary for proficient readers (1990a).

Different definitions have emerged about the nature of proficiency. Some language testers define it as knowledge of vocabulary and grammar, and some believe that these two types of knowledge must be mobilised and used in communicative tasks. Some scales of proficiency present the language behaviour from zero to native-like proficiency levels. Although there is a general agreement among researchers about underlying abilities and skills in language proficiency, there is much controversy about the content and boundaries of this underlying competence (Canal 1983a). There are two major contradictory approaches to describing and assessing proficiency, analytic and synthetic. And recently, some models have been proposed that consider the communicative aspect of language.

Analytic Approach

Analytic approaches conceptualise proficiency as consisting of some components and measure it by measuring one, some or all of the components in discrete point tests (Ingram 1985). According to Ingram, this "pre-scientific" period of language testing is characterised by the influence of behaviourist linguistic theories that tested language proficiency by individual patterns or "discrete points". Due to the strong influence of structuralists, it was mostly accepted that the knowledge of the language meant the knowledge of its component elements (Vollmer and Sang 1983). According to their statement, factor analytic studies are based on this belief in the multidimensional or divisible competence hypothesis. In this approach, language proficiency is tested as the sum of all its components. For example, Cooper (1972) represents an analytic approach to defining and measuring proficiency. He presents it in a framework with a cube consisting of different cells. Phonology, syntax, semantics and "total" make up one cell, the next cell being four macro-skills and a third cell consists of

varieties. In this way, proficiency is represented as the sum of these cells. However, according to Ingram (1985), the problem is that language is not the sum of its components but all the components should be integrated for doing scientific tasks in specific situations. Another criticism made by him is that there is no significant correlation between discrete point tests and tests of practical proficiency.

Synthetic or Unitary Approach

Synthetic approaches integrate all the components of language proficiency and measure it by integrative tests. This view came after the realisation of the complex and integrated nature of language (Ingram 1985). Oller argues that in any macro skill, there is a general unitary language proficiency which is based on the "expectancy grammar" of the learner (1973, 1976). To him, language proficiency is a single unitary ability (1976, 1979). He argues that tests focusing on "isolated phonological elements, or isolated vocabulary, or isolated synthetic rules, or notions/functions, or whatever make less practical sense than discourse oriented testing procedures that integrate many of the foregoing hypothesised components" (Oller and Khan 1980, pp. 28-29).

This model has its own advocates and proponents. For example, Ingram argues that the components of language proficiency are balanced in global or synthetic methods, giving a better and more accurate description of language proficiency (1985). On the other hand, this model has been under criticism since it has not been supported empirically. For example, Cummins argues that "The sociolinguistic aspects of communicative competence or functional language skills appear unlikely to be reducible to a global proficiency dimension" (1979, p. 198). Canale and Swain (1980) also hold the same position to global view of language proficiency.

A General Trait and One or More Specific Traits

Later, a model was proposed which was more satisfactory than the unitary approach. This model assumes one general trait and one or more specific traits and it was suggested by Bachman and Palmer (1981) and Carroll (1980). Oller himself supported this view later in his publications:

> It is possible that there is a basic global system underlying all systems of language, but that there remain certain components which are not part of the central core that account for what are frequently referred to as differences in productive and receptive repertoires. (Oller 1979, p.6)

A More General Characterisation of Proficiency

According to Canale (1983a), giving a more general characterisation of linguistic proficiency is both desirable and sufficient in the attempt to describe its core dimensions. Bruner (1975) and Cummins (1981a) have tried to achieve this by suggesting such general characterisations of proficiency. Bruner (1975) distinguishes 3 levels of proficiency consisting of linguistic competence, communicative competence and analytic competence (referred to in Canale 1983a). In this way, universals of grammar (linguistic competence), rules of social language use (communicative competence) and context-independent use of language (analytic competence) are all taken into consideration. Canale considers several advantages in Bruner's theoretical framework. He points out that Bruner's framework takes both language code and use of it in context into consideration. Secondly, analytic use of language which is distinct from communication is recognised (1983a). However, some shortcomings are attributed to Bruner's model. Firstly, no distinction is made between

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linguistic and other cognitive demands on the user of language. The second criticism to Bruner's model is his dichotomy of communication as context dependent (involving immediate external reality) and context free (analytic language), while context always exists in some form (Canale 1983a), although it may be created or imaginary not observable. As Laesch and Kleeck (1987) argue, "the contexts do not literally go away but they become increasingly historical or hypothetical, abstract and complex" (p. 172).

A theoretical framework which responds to some shortcomings of previous models is suggested by Cummins. As shown in the following figure, in this model which is a revision of his previous model, basic interpersonal communicative skills are distinguished from cognitive/academic language proficiency, highlighting cognitive involvement and contextual support (Cummins 1981a, 1981b). In this model, language tasks are classified into four groups in quadrants A to D. Quadrants A and B are related to context embedded tasks in which the language user relies on non-verbal and situational and common world knowledge. Quadrants C and D are characterised by reliance on linguistic cues to meaning (Cummins 1981a, 1981b).

Figure I : Cummins' model (1981a,b)

cognitively undemanding

	A	C

context   context

embedded   reduced

	B	D

cognitively demanding
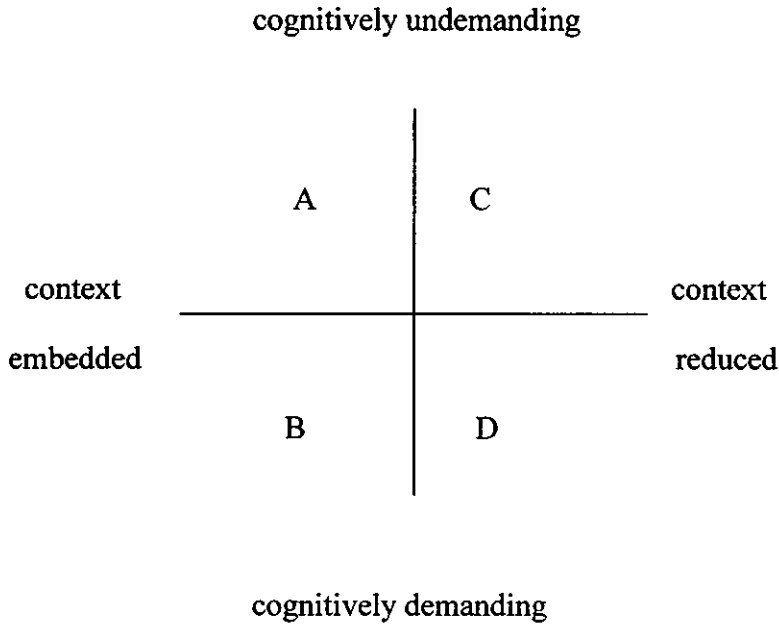
As Hammadou points out:

> Cummins identifies a strong relationship between
> language proficiency and context because at one
> extreme "context embedded" language is supported
> by a wide range of types of cues from the situational
> to the paralinguistic that give redundant information;
> and at the other, "context reduced" communication
> occurs with language that relies on cues purely
> linguistic in nature. (1991, p. 28)

Cummins (1984) argues that despite the different surface features of bilinguals' L1 and L2, at a deeper level, linguistic interdependence is shared within a "common underlying proficiency" (referred to in Harley, et al 1990b). He clarifies his common underlying proficiency as a "dual iceberg" in which common cross-lingual proficiencies underlie the obviously different surface manifestations of each language (Cummins and Swain 1986).

Canale presents some of the advantages and shortcomings of Cummin's model. According to him, Cummins responds to some of the shortcomings of Bruner's model and also in his model a distinction is made between linguistic and other cognitive demands of language use. Moreover, his interpersonal and intrapersonal tasks are not dichotomised. Nevertheless, there are some shortcomings in his model. First of all, language proficiency is equated with communicative proficiency in his model. Secondly, there are certain language tasks that may share both context embedded and context reduced features, but the model does not make it clear. And thirdly, some of the tasks (C and D) are not clearly ordered in this sequence of difficulty (Canale 1983a).

Communicative Approach

A further distinguished approach to describe the nature of proficiency emphasises the learner's total communicative skill followed by an authentic approach to testing proficiency focusing on total language behaviour not its component parts (Ingram 1985). This approach seems to be a more inclusive description of the nature of language proficiency since it takes the knowledge of how language is used in communication as well as the knowledge of grammar into consideration. After criticising the unitary approach to language proficiency, Canale and Swain (1980) developed a theoretical framework which initially distinguished 3 different dimensions of communicative competence: grammatical, sociolinguistic and strategic competence. However, their model was later developed by Canale (1983a) into grammatical competence, discourse competence, sociolinguistic competence and strategic competence with three dimensions (basic language, communicative language and autonomous language) for each component. In this model, context has an impact on the sociolinguistic and

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strategic competence of the language user. Performance is based on the ability to understand language in different sociolinguistic contexts and different moods (Canale and Swain 1980).

Canale and Swain's three original factors are found in the models proposed by some other researchers who have tried to specify a theoretical framework for communicative competence in a second language. For example, Munby (1978) proposes linguistic encoding, sociocultural orientation, sociosemantic basis of linguistic knowledge, and discourse level of operation. Hymes (1982) also tries to present a framework in which he includes resource grammar, discourse grammar and performance style.

Some researchers have tried to validate these various components of proficiency. Bachman and Palmer (1982), drawing on the communicative model of Canale and Swain (1980), developed a battery of language tests including grammatical, pragmatic and sociolinguistic competences. They succeeded in finding some support for the distinctness of components of their proposed communicative proficiency. They found that the components of grammatical and pragmatic competences were closely related to each other while sociolinguistic competence components were distinct from each other. In all, they provide evidence that language proficiency data clearly consist of more than just one general factor.

In another attempt, Allen, et al (1983) developed tests of grammatical competence, discourse competence and sociolinguistic competence. Their study was an attempt to test the hypothesis of the factorial distinctness of these components, ie. an attempt to find out whether three hypothesised traits were empirically proved to be distinguished. They did factor analysis on test scores which finally did not support the distinctness of components. Although their attempt to validate different components of communicative competence was not conclusive, it does not mean that there is not any distinction since Palmer and Bachman have found

some evidence of the distinctness of the components of communicative proficiency.

Later, Harley, et al (1990a) found a mode difference but the three components were not confirmed. To describe the nature of language proficiency, Harley, et al tried to analyse the differences between spoken and written language which can be a very important factor in reading English. They designed a large scale factor analytic study to test a model of language proficiency relevant to educational context. The specific feature of their model is that it distinguishes grammatical, discourse and sociolinguistic competences and their use in different task conditions required. The model is influenced by two previously proposed frameworks for conceptualising the nature of language proficiency. The first one is Canale and Swain's communicative competence framework (1980) in which grammatical, discourse, sociolinguistic and strategic competences are distinguished in a later refinement by Canale (1983b). The second one is Cummin's framework (1984) which involves a distinction between context reduced and context embedded situations in language use. Harley, et al integrated these two frameworks to make a model consisting of a "3 x 3 matrix composed of measures of grammatical, discourse and sociolinguistic competence assessed in oral and written productive modes and by multiple choice written tests" (1990a, p. 10). They tested their hypothesis about interrelationships among components of language proficiency by confirmatory factor analysis mentioned in Bachman and Palmer's work. The purpose of their study was to determine whether the three key components of language proficiency (traits) were distinguishable. They operationalised the traits of grammar, discourse and sociolinguistic competence in three methods of oral, multiple choice and written composition. As they stated, their analysis failed to confirm their three-trait structure of proficiency hypothesis. Instead, a two factor solution was produced: a one general

language proficiency factor and a written method factor (1990a), the finding which tends to support Cummins' view.

The interesting point in their work is that they are the first to include mode differences in the model of proficiency. In their model, as in systemic models, language is considered in its different levels of grammar and discourse, consisting of textual cohesion and coherence, and social appropriateness of language use. Although they could not clearly confirm the distinction between the key components of language proficiency, the way they looked at the construct of language proficiency implies that these constructs are distinguishable while related to each other educationally. Despite receiving no proof for their hypothesis, they finally concluded that "language proficiency must be conceptualised within a developmental context as a function of the interactions that students or learners experience in their languages....[and] the concept of traits is something that should be maintained...they are conceptually distinct and relevant to educational contexts" (Harley, et al 1990a, p. 25)

The model proposed by Bachman (1990b) extends the previous models because all the processes by which different components of language proficiency interact with each other and with the context of language use are described and elaborated. The theoretical framework of communicative language ability (CLA) of Bachman has three components: 1) language competence, the specific knowledge components used in a communication through language, 2) strategic competence, the cognitive or mental capacity for using components of language competence in the use of language for communication, and 3) psychological mechanisms which are neurological and psychological processes involved in the use of language. All these three components interact with context of situation and knowledge structure, ie. language user's knowledge of the world.

Language competence is classified into two competences: organisational and pragmatic. Each of these consists of several categories in

a tree diagram. Organisational competence is composed of grammatical and textual competencies. The components of grammatical competence are vocabulary, morphology, syntax and phonology/graphology. Cohesion and rhetorical organisation make up the components of textual competence. Pragmatic competence, in turn, consists of illocutionary competence and sociolinguistic competence. The former is comprised of some language functions including ideational, manipulative, heuristic and imaginative functions. Sociolinguistic competence is like that of Bachman and Palmer (1982) consisting of sensitivity to dialect or variety, to register, to naturalness, and to cultural references and figures of speech. As he states, "In language use, these components all interact with each other and with features of the language use situation. Indeed, it is this very interaction between the various competencies and the language use context that characterises communicative language use" (Bachman 1990b, p. 86).

In fact, his work is consistent with other models of communicative competence approach which consider both competence in language as well as the ability to use this competence to achieve communicative goals. But this model seems to be a more complete conceptualisation of the nature of language proficiency since it includes all the competencies in language usage as well as textual competencies such as understanding cohesion and rhetorical organisation of the text. The relationship between language user and the context of situation is described more completely in pragmatic competence. The importance of different macrofunctions of language (ideational, manipulative, heuristic and imaginative) as well as the differences in register, ie. functional varieties of language, is taken into consideration. As Brindley (1991) argues, the model proposed by Bachman "represents a valuable and necessary step towards building up a more accurate picture of the behavioural domain we are assessing" (p. 56).

In all, it is now largely agreed that language proficiency is not a general factor ability but it consists of several distinct components such as

the ability to understand and use language in context of situation (Canale and Swain 1980). Alderson (1991) best summarises the situation, "According to the recent works on the nature of language proficiency and especially careful empirical work of Bachman and Palmer, it seems that many researchers are led to declare that language proficiency is both unitary and divisible at the same time. There have been evidence to support a common or general factor in language proficiency measured in different tests and also some support is found as an evidence for separable components" (p. 18).

Although Bachman's model is a more complete conceptualisation of language proficiency, it is impoverished as compared to the systemic functional model of language. In his model, every component is in isolation and not seen as a single system in which sociolinguistics gets realised through grammatical and lexical system. In other words, he does not see these components as realised through each other. In models of communicative competence, the components are identified and listed but the relationship between parts is not made clear. In most of the communicative models, form and meaning are separated without any attempt to interrelate them. Therefore, they are partial models of language rather than a comprehensive one. An efficient model of language should describe the interrelationship between its components, in other words, the relationship between language and context of situation should be systematically shown.

The model of language on which this study is based is the systemic functional model of language. In comparison to other communicative competence approaches to language, this model seems to be a more holistic and/or comprehensive one in which language, meaning, context and culture are all systematically interrelated. In fact, a functional approach to language is an attempt to describe how language is used in real contexts and also how it is a resource for meaning making, not only a set of formal rules.

This model is chosen as a basis for this study since the relationship between text and context is clearly recognised in it and various levels of language are differentiated and interrelated. The advantages of this global theory of language over current theories of grammar, as Matthiessen and Halliday (in press) state, is that it is oriented toward function rather than form, text rather than sentences, resource rather than rules, meaningfulness rather than grammaticality and rhetoric rather than logic. In fact, in this model, text is put in context of situation (register) which is in turn put in the context of culture (genre), all of which are related through the concept of realisation. Although different levels are differentiated in this model, their interrelationship is made explicit. In spite of the impossibility of coming to a complete understanding of this model in a single work like this, the following section is an attempt to describe the characteristics of the systemic functional model of language.

SYSTEMIC FUNCTIONAL MODEL OF LANGUAGE

Three Levels of Language

A language system underlies all the language choices through some resources available to language users in meaning making. This language system consists the three strata of sounding, wording and meaning. In making our meaning , we make choices from graphology (writing system) in writing and from phonology (sounding system) in speaking. In writing, we deal with letters, their combinations, punctuation and so on, while in speaking we deal with sounds, their combinations, stress, intonation, accent, and so on. This level of language system enables the language users to express the wording level physically.

To create our meaning, lexis and grammatical resources are available to language users as wording level of the system. This level which is technically called lexicogrammar is composed of vocabulary and the grammar of the language.

Semantics provides the language users with some resources as choice to make what they mean. The relationship between these three levels in systemic approach to language is that of realisation. Phonology/graphology realises lexicogrammar which in turn realises semantics. In other words, semantics is realised by lexicogrammar which is in turn realised by phonology/graphology. The two-way relationship between different levels of language system is shown in concentric circles in figure 2. According to systemicists, the size of the circles indicates that the number of possible meanings is larger than the set of grammatical resources which are in turn larger than the number of sounds available to language users (for more information, refer to Halliday 1985b and Halliday and Hassan 1985).
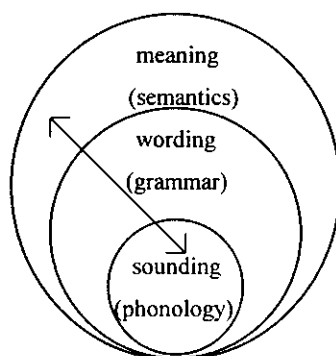
Figure 2. Three Strata in the Language System and Realisation

Functions of Language

Language can also be viewed in terms of the functions it performs. There are three major components of semantics of every language. First,

language is used as a "representation of experience", enabling users to "ideate" or think about the world or what is happening in it- people, things, places, qualities, events and their relationships. This function is called ideational, consisting of logical and experiential functions. Halliday defines experiential meaning as "representing the real world as it is apprehended in our experience", and logical meaning as that "expressed in grammar as different forms of parataxis and hypotaxis" (Halliday and Hassan 1985, pp. 19-20).

Second, language is used to enact social relations and participate in the world, ie. giving and demanding information and goods and services. This function is called interpersonal metafunction defined by Matthiessen and Halliday as "the grammatical resources for enacting social roles in general, and speech roles in particular in dialogic interaction" (in press).

Third, language is used to support ideational and interpersonal metafunctions by presenting them as a meaningful and coherent text. This is textual metafunction which "is concerned with the creation of text - with the presentation of ideational and interpersonal meaning as information that can be shared by speaker and listener in text unfolding in context" (Matthiessen and Halliday, in press).

Context of Situation

Language occurs and realises what is happening in a context of situation. There is a systematic relationship between language or a text and its immediate context of situation. Halliday uses the term register for describing the three domains of context of situation in which a text or language occurs. It is simply defined as: "Language varies as its function varies. It differs in different situations. The name given to a variety of language distinguished according to its use is register" (Halliday, et al 1964, p. 87). The three aspects of context of situation are field, tenor and mode

which help the language user to decide on the language choices available to him. Halliday defines three variables of context as the following:

> 1. The field of discourse refers to what is happening, to the nature of the social action that is taking place: what is it that the participants are engaged in, in which the language figures as some essential component?
> 2. The tenor of discourse refers to who is taking part, to the nature of the participants, their statures and role: what kinds of role relationship obtain among participants, including permanent and temporary relationships of one kind or another, both the types of speech role that they are taking on in the dialogue and the whole cluster of socially significant relationships in which they are involved?
> 3. The mode of discourse refers to what part the language is playing, what it is that the participants are expecting the language to do for them in that situation: the symbolic organisation of the text, the status that it has, and its function in the context, including the channel (is it spoken or written or some combination of the two?) and also the rhetorical mode, what is being achieved by the text in terms of such categories as persuasive, expository, didactic, and the like? (Halliday and Hassan 1985, p. 12)

These three situational variables make up the register of situation which determine the language choices made in the process of the creation of meaning. Halliday also calls them the social action, the role structure and the symbolic organisation respectively (Halliday and Martin 1993). In whole, Halliday defines register as "the configuration of semantic resources that the member of the culture associates with a situation type. It is the meaning potential that is accessible in a given social context" (1978, p. 11).

In systemic grammar, there is a systematic relationship between variables of register and metafunctions of language (ideational, interpersonal, textual). In this way, field is realised or expressed by the

experiential function, tenor by the interpersonal function and mode by the textual function in the semantics (Halliday and Hassan 1985). Halliday summarises the relationship between situation and text in the following figure:

situation: features of the context	text: functional components of semantic system
field of discourse (what is going on) tenor of discourse (who are taking part) mode of discourse (role assigned to language)	experiential meanings (transitivity, naming, etc.) interpersonal meanings (mood, modality, person, etc.) textual meanings (theme, information, cohesive) relations

Figure3. The Relationship between Situation and Text

(Halliday and Hassan 1985, P. 26)

Alternatively, this relationship is shown in the following figure. The double headed arrows show the relationship between register variables and functions of language. Language realises the context which is in turn realised by metafunctions of language, all simultaneously.
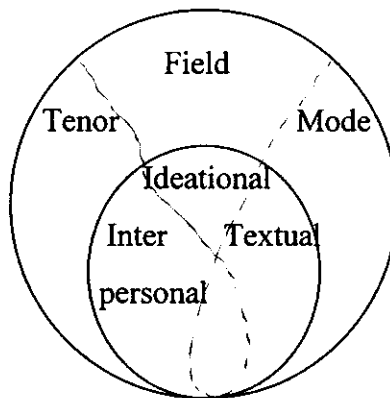
Figure 4. Register Variables as Realised in Ideational, Textual and Interpersonal Metafunctions (Halliday and Martin 1993, p. 30)

Context of Culture

Immediate environment or the context of situation is not the only factor influencing our choice of language. Although language is broken down in terms of register choices, it is perceived as whole rather than combinations of field, tenor and mode. Any context of situation is embedded in a broader background as the context of culture. Different cultures use language for different purposes and have various situations with some specific verbal realisations. The texts which are used to fulfil different purposes of each culture are called genres by systemicists. According to Martin (1985), genres are "how things get done, when language is used to fulfil them" (p. 250). In other words, they are the representation of "the verbal strategies used to accomplish social purposes of many kinds" (Martin 1985, p. 251). For more detail refer to the next section (page 46). So, every language system is developed in a specific culture, with specific beliefs, thoughts, values all of which help to evolve the language of that culture. As Macken, et al (1990) point out, "In each genre, choices of field, mode and tenor are combined in ways that suit the speaker/writer and take account of already established and socially endorsed conventions" (book 4, p. 18).

In systemic model, this relationship between language and culture is clearly described. Derewianka puts it this way, "The genre of a text is partly determined by the culture in which the text is used, since different cultures achieve their purposes through language in different ways" (1990, p. 16). The language choices that every member of a society makes are the product of that specific culture. In fact, genres are chosen with respect to the language choices made in particular context of situations where the language is used. The genres, as explained by Halliday and Martin, are "staged, goal-oriented social processes which integrate field, mode and tenor choices in predictable ways" (1993, p. 36). As Kress (1985) defines genres, they are "The forms and functions of the social occasions and the purposes of the participants" (p. 21). In general, to understand how a text is related to its context, both register and genre concepts are significant factors to consider.

The relationship of all mentioned dimensions of language is shown in the following figure, although it seems inappropriate to describe language as a complex system in a diagram. Nevertheless, this model represents the way systemicists conceptualise the nature of language proficiency. Genre as the context of culture is realised by the variables of register. Field, tenor and mode as context of situation are realised by ideational, interpersonal and textual metafunctions of language, as semantics, grammar and phonology/graphology. Double headed arrows show the mutual realisations or determination. Each level construes and is construed by the other level, that is larger circles recontextualise smaller ones. In fact, the farther the circles move from phonology, the larger the units that are focused on.
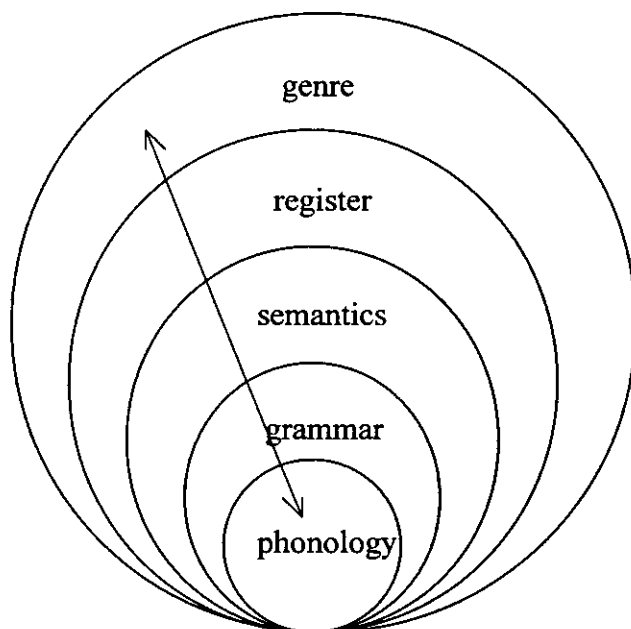
Figure 5. Language in the Context of Situation and the Context of
Culture (Martin 1992)

READING: HISTORICAL OVERVIEW OF READING MODELS

Reading is a critical skill for second or foreign language readers in an academic context. Considering ESL or EFL university students who use the English language for acquiring information, the ability to read efficiently is the first aim to be achieved. According to Carrell (1988a), effective reading in a second language is essential especially for 3 groups: those who study in a foreign language context, those with a high level of proficiency and those who study English for academic purposes. Researchers or those engaged in the second or foreign language education have proposed various models of reading. But an approach should be emphasised that promises a better understanding of all the variables involved in reading, ie. variables related to both the text and the reader. As Massaro (1984) states, "Building and testing models of reading processes advance our understanding of what the reader does while reading" (p. 111). Therefore, It would be helpful to have

an understanding of the recent history of reading models and then discuss the model of reading developed in this study.

In spite of the differences between L1 and SL/FL reading, according to Williams and Moran (1989), the topics of research in SL/FL reading are mostly introduced by first language research. Because of the numerous common issues in the research in reading in both languages, most researchers have used models of reading which have been previously introduced in L1 reading.

According to Samuels and Kamil, research in reading is approximately a hundred years old beginning with Emil Javal's publication in eye movement in 1879. But the models describing the complete process of reading are only 30 years old, starting with Holmes's publication of the substrata factor theory of reading (1984). For some decades, experimental psychologists have contributed much to the research in the area of reading performance. The first models proposed were called bottom-up or text-driven models. Later, top-down or concept-driven models were introduced. In the recent years, interactive models of reading have developed in an attempt to obviate the shortcomings of those two earlier models.

Bottom-up Models

Following structuralists like Fries and Lado and the influence of audio-lingual method, oral skills were considered more important than reading before 1970. According to Rivers (1968), in order to develop reading proficiency, the primary step is to decode sound-symbol relationship (referred to in Carrell 1988a). As an structuralist, Bloomfield states that in order to learn to read, the readers must be able to recognise letters and relate them to sounds and also to learn left to right eye movement (Bloomfield and Barnhardt 1961). As a result of this influence, early attempts in building a model of reading viewed it as a receptive or decoding process. Reading was

considered a decoding process in which the reader builds up the author's meaning from the smallest units which are letter and words coming to the phrases, clauses and intersentential links. In other words, the reader moves from "bottom" to "top" in order to get the intended meaning of the author. This view of reading is called "bottom-up", or as Barnett (1989) calls it, "text-driven" model of comprehension. These models were introduced by Laberge and Samuels (1974), Gough (1972/1976), Fries (1963), and Bloomfield (1942). In all these models, the use of any form of phonemic recoding is essential in the process of reading, starting with graphic input and moving to the higher order processes (Cziko 1980). Polkowska, et al call these models "data-driven" processing and summarise them as:

> Autonomous models typically assume sequential (serial), strictly ordered, and bottom-up ordering of component processes. A serial model assumes a sequentially given order of operations, one following the other, from the input to the system,....The sequence is irreducible since each operation is required for completion. (1986, p. 239)

Gough's (1972/1976) serial stage model and his information processing approach had an impact on the research on reading. He stated that the reader should account for every letter individually before assigning meaning to any individual string of letters. His model describes the process of reading since the eye first recognises the printed word to the time that the meaning is extracted. In the Laberge and Samuels's (1974) information processing model, the attention is paid to attentional resources, different routes the information takes and the way of processing information in each of the components (referred to in Samuels and Kamil 1984).

The teaching of reading was affected by these models up to the 1970's. They focused on the importance of oral production and comprehension. Therefore, reading followed the acquisition of speaking

skills. As a result, a number of researchers raised some of the deficiencies in the bottom-up models of reading. Adams states that the most important deficiency in the linear models is not only the incomplete analysis of the text, but also the view that reading is only extracting meaning from the text. He argues that text is only one of many sources of information. The other source of information is the reader's background knowledge which is involved in the action. He points out that the general problem with bottom-up models is their one-sidedness, since these approaches do not recognise the role higher order knowledge plays in processing the text (Adams 1982). Thus, these models fail to account for sentence-context effects and the role background knowledge have on reading comprehension.

According to Rumelhart (1977), one of the serious deficiencies of the bottom-up or linear models is that the information is passed along one way, without allowing the higher order information to influence the process in the lower order. Similarly, Stanovich believes that lack of a feedback loop is a major shortcoming of bottom-up models and states that, "It is not necessarily the case that the initiation of higher level process must await the completion of all lower ones" (1980, p. 36).

In sum, the fact that reading is considered as mere mechanical and serial bottom-up processing in this model caused it to be criticised by many researchers, resulting in its unpopularity. However, it influenced the teaching of reading, in that grammar and words were used as a means to teach reading. But the processing of a text does not consist of a series of stages in which each stage provides input for the next stage. These observations led to viewing reading as an active rather than passive process which later caused the emergence of a new approach called top-down models of reading.

Top-down Models

In the 1970s, psycholinguistic model of reading proposed by Goodman was an attempt to change the decoding view of SL reading and introduce reading as a top-down process. He entitles the proponents of bottom-up model of reading the "fundamentalists in religion" and argues that reading can not be viewed only in terms of print, words and letter-sound relationship. Rather, it is a process of "constructing meaning", not a process of learning words and grammar (Goodman 1981, p. xiii). To him, the reader is an active participant in the process of reading which is a "psycholinguistic guessing game" and the message encoded by the writer is reconstructed by the reader (1971). According to this view, the reader samples and selects the grapho-phonemic, syntactic and semantic cues in the written language in order to predict or guess the meaning, and then confirm it or reject it and relate it to his/her previous knowledge in the process of reading. So, the process starts from the higher level and interacts with lower level information.

Although Goodman includes the three cues in his model, he does not emphasise language control. Instead, effective strategies are focused as prerequisite for efficient reading. This view affected teaching reading so that grammar and vocabulary was not emphasised any more and the principal aim of instruction became teaching comprehension strategies. Speaking only of L1 readers, the idea of "universality of reading process" as claimed by Goodman led to a shift to the importance of strategies rather than efficient data processing. According to this view, the mastery of the code may be related to the beginning stages of reading process and as soon as it is achieved, the language has no effect on the process of reading. To him, reading process in all languages is much the same "with minor variations to accommodate the specific characteristics of the orthography used and the grammatical structure of the language" (1971, p. 140).

Smith (1971) is another top-down researcher who believes that reading is a hypothesis-driven process. These researchers point out that in the process of constructing meaning, the proficient reader selects not all the cues but the most productive ones and his contribution is far more than merely visual symbols, as reviewed in Samuels and Kamil (1984). Smith's work is an attempt to distinguish between immediate and mediated meaning identification while relying on language factors instead of graphic information (Samuels and Kamil 1984).

In the beginning, this theory of reading was not related to SL readers. But later, the work of second language researchers such as Eskey (1973), Savile-Troike (1973), Clarke and Silberstein (1977), Clarke (1979), Mackay and Mountford (1979), and Widdowson (1978,1983) was a starting point to consider second language reader an active participant in the process. He predicts, makes hypothesis, confirms and samples parts of the text.

In this relation, Coady developed a second language reading model in which he views reading as "essentially consisting of more or less successful interaction among 3 factors: higher level conceptual abilities, background knowledge, and process strategies" (1979, p. 7). Moreover, pedagogical implications were proposed by Clarke and Silberstein (1977), emphasising teaching strategies of reading in a SL context (Grabe 1991). As Carrell states, only since this date has a top-down approach to SL reading been developed (Carrell 1988a). Top-down proponents of SL reading believe that as well as being active in prediction and confirmation, the reader uses his/her background knowledge (linguistic, content, formal) in the process of reading (Carrell 1981, 1982, Hudson 1982, Carrell and Eisterhold 1983).

Although the views of top-down advocates of reading process has greatly influenced reading research and teaching, some shortcomings are

also attributed to these models. Some of the assumptions of the top-down model have not been proven in experiments. For example, in an attempt to prove that reading is not only a concept-driven process, Stanovich (1980) experimented on the differences between L1 readers. The results of his study proved that poor readers relied more on contextual factors and showed more contextual facilitation effects, the observation that is contrary to the claim made by top-down theorists. He believes that top-down models attempt at explaining only beginning readers while they fail to take the skilled readers into consideration. Moreover, the superiority of good readers over poor ones in using context to read unknown words (as predicted by top-down proponents) is not supported by empirical research (Nunan 1989). Many studies experimenting the role of context have provided evidence that reading is not a concept-driven process (West and Stanovich 1978, Perfetti, et al 1979, Perfetti and Roth 1981). Adams (1982) argues that the problem with top-down approaches, as with bottom-up models, is their uni-directionality, ie. these approaches do not consider the importance of lower level knowledge needed in processing the text.

One of the major problems with top-down models is that in the process of constructing the meaning of the text, accurate data processing, ie. the use of cues in the text is not that important. As Eskey (1986) argues, these models stress higher level skills at the expense of lower level ones, so skills such as accurate identification of words and grammatical forms are neglected. Although Eskey had been one the proponents of top-down models, he does not agree with their approach to teaching reading. He believes that providing the readers with the background knowledge of the text is not enough to be emphasised in reading instruction. Rather, a mastery of decoding or language skills is necessary in effective reading. He believes that "Language is a kind of schema too,...fluent reading entails bottom-up perceptual and linguistic skills as well as higher order cognitive

processes" (1988, p. 96). Similarly, many studies concerned with the differences between poor and good readers have come to the same conclusion as that of Eskey, stating that accurate data processing is a necessary condition for higher level processing. So, the claim made by top-down theorists, ie. good reading does not require bottom up skills and only higher level processing of the data suffice is not supported in practice. It is mostly seen in the experiments, as Van Dijk and Kintsch (1983) argue, that:

> Good readers are simply better than poor readers, both when it comes to decoding skills and to guessing skills. They form better, more sophisticated hypotheses during reading. They do not have to resort continuously to hypothesis testing processes s..., but when they do, they do it well. (p. 24ff)

In general, as highlighted by Mitchel 1982, many problems and shortcomings of top-down models caused them not to be accepted as a satisfactory model of fluent reading, giving rise to a more promising approach to reading, called interactive approach to reading process.

Interactive Models

Interactive models have been emerged as a result of many criticisms to bottom-up and top-down models of reading. This approach is a reconciliation of bottom-up and top-down strategies in reading (Rumelhart 1977, Sanford and Garrod 1981, VanDijk and Kintsch 1983, Stanovich 1980 and Adams and Collins 1979).

Interactive approach to reading essentially refers to two different views to reading which seems to be complementary. As explained by Grabe (1991), the first view describes the interaction between reader and text. The

meaning is reconstructed by the reader's background knowledge as well as the knowledge contained in the text. The second view describes reading as the interaction between several processing skills simultaneously leading to efficient reading. Eskey (1988) views the term interactive as "interaction between information obtained by means of bottom-up decoding and information provided by means of top-down analysis, both of which depend on certain kinds of prior knowledge and certain kinds of information-processing skills" (p. 96). In this approach, both graphic and contextual information is used in the interpretation of meaning (Cziko 1980).

These models of reading maintain that reading is not only an active but also an interactive process. Top-down and bottom-up processes interact to help the reader to interpret the text (Rumelhart 1980, VanDijk and Kintsch 1983, Carrell and Eisterhold 1983, Sanford and Garrod 1981, Carrell 1988a and Eskey and Grabe 1988). According to Rumelhart (1977) and Ulijn (1980), different levels of knowledge (linguistic and world) interact in the process of reading. As soon as the reader recognises graphic cues, different schemata help him/her to interpret the text. So, a model in which the notions of top-down and bottom-up processing are incorporated is an interactive model (Grabe 1988). Included in these models are the verbal proficiency model of Perfetti (1985), the interactive-activation model of McClelland and Rumelhart (1981), Just and Carpenter's (1980) model, Kintsch and VanDijk's (1978) model, Stanovich's (1980) interactive compensatory model, Ruddell and Speaker's (1985) interactive reading model, Taylor and Taylor's (1983) bilateral cooperative model, Rumelhart's (1977) interactive model of reading and Adams and Collin's (1979) schema-theoretic view of reading. This approach has been recognised in many first language studies (Goodman 1967,1971, Kolers 1969, Smith 1971). But it is only more recently that it has been acknowledged in ESL or EFL studies

(Rumelhart 1980, Sanford and Garrod 1981, VanDijk and Kintsch 1983 and Carrell and Eisterhold 1983).

As an example of this approach to reading, many sources of information are combined in Stanovich's interactive compensatory model. According to him, interactive models, combined with assumed compensatory process provide a better understanding of reading performance than top-down and bottom-up models. As he points out, while both top-down and bottom-up models are linear, the interactive ones are cyclical because each level of processing tends to synthesise the stimulus by his own analysis and imposed constraints of both higher and lower level processes. He also contends that the difficulty into which bottom-up models run is that "they usually contain no mechanism whereby higher level processes can affect lower levels" while top-down models "have serious deficiencies as explanations of fluent reading" (Stanovich 1980, pp. 34-5).

Having the same assumption of the existence of an interaction between reader and text, different interactive models include different components of these two variables. As an example, Ruddell and Speaker's (1985) model consists of five components of environment, knowledge, product construction and evaluation, affective/cognitive/metacognitive control and new knowledge, all interacting simultaneously. In this model, a set of complex interactions occur between reader and text variables. The reader environment consists of all the features used by the reader in the process of the construction of meaning including textual, conversational and instructional features. Knowledge utilisation and control components activate information and influence the way the reader processes the text. This is guided by the goal of the reader including his affective, cognitive and metacognitive states. Declarative and procedural components are different schemata on the part of the reader and procedures for using this knowledge.

The reader product is the result of the interaction between all the mentioned components.

Rumelhart's model (1977/1985) of the reading process is frequently referred to in reading research. He describes reading as an interactive process and his interactive model assumes the interaction of sensory, syntactic, semantic and pragmatic information simultaneously leading the reader to his/her interpretation of text. All these levels of information guide the formation of a hypothesis followed by testing it. According to him, a set of knowledge sources scan the graphemic input and as a result, a hypothesis is made. While simultaneously, all these processes interact mutually and reciprocally with each other as well as with cues in the text. Finally, the interpretation is made. In this way, reading process is viewed not only as top-down or bottom-up but also it is based on expectancies made by one of the sources of knowledge and also on the actual information in the text. In sum, syntactic, semantic, lexical and orthographic information go to a message centre called the pattern synthesiser which allows the interaction of all these sources. Therefore, the interactive view to reading emphasises neither bottom-up nor top-down processing. Rather, there is an interaction between different knowledge sources simultaneously.

However, what seems to be a shortcoming in the interactive models proposed by different researchers is that they usually neglect the importance of genre and register. Although Carrell includes different parts of the schema theory, she does not consider those of genre and register. Procedural schema is included in her model but it is not identical to genre since it does not include the social aspect of genre. The importance of the inclusion of these two factors in an efficient model of reading is considered by Wallace (1992), forming the basis for the model of reading developed in this study. This model is an attempt to include a variety of factors which are responsible for good or poor reading comprehension. An attempt is made to

include all the skills and knowledge that the reader brings to the text as well as those inherent in the text. This model emphasises consistency with an up-to-date model of proficiency, in which genre and register are included. This model, explained in the following section, implies that both comprehension and production of a text entail a complex interaction between reader, text, writer and the context of the writing and reading events. As in systemic view to language, meaning is constructed on all levels of language, whether linguistic (form) or contextual (content). Moreover, within the perspective of the model presented here, there is an attempt to predict what blocks efficient reading comprehension. This model is interactive in nature, explicit about different processes involved in reading, and consistent with empirical findings in research. Although all interactive models, as well as this one are in their beginning stages of a clear description specially of higher level processes and the way the interactions occur, it is used as a basis for our questions related to reading problems. In the following section, a description of the model of reading developed in this study is presented.

READING AS THE INTERACTION BETWEEN READER AND TEXT

In this part, there is an attempt to describe and look at the individual factors that constitute a model of reading. Wallace (1992) states "Reading as interpreting means reacting to a written text as a piece of communication" (p. 4). Following her, reading is a kind of communication between reader and text or rather between reader and writer. According to Candlin and Saedi (1983), "The discourse process of writer...(is) an elaborative process, resulting in text, (and) that of the reader ...(is) a reductive process, working upon the text" (p.1, quoted in Carrell 1987c, p. 25). In this type of communication, the writer has an intent which the reader tries to understand

purposefully. As expressed by Widdowson (1979), the relationship between the writer and the reader is something like a dialogue. Writers try to anticipate any possible confusion on the part of the reader arising from lack of shared knowledge (referred to in Wallace 1986). According to Goodman, et al (1976), "since reading involves a transaction between a reader and a text, the characteristics of the reader are as important as those of the text" (p. 203). Moreover, as Wallace points out, a complete view of reading incorporates individual as well as social perspective. In this dynamic view, reader, context and text have a role to play, actually "it emphasises a reader's progression through the text rather than the text itself" (1992, p. 39). Therefore, the reader is actively engaged in the process and has to work to get the meaning out. During this process, different cues in the text as well as the reader's background knowledge in different levels help him to interpret what he is reading. As Golden points out, "The reader draws not only on the text but also on personal knowledge of the world and other works of literature" (1986, p. 91). So, in a model of reading both a product view (what the reader gets from the text) and a process view (how the reader interprets the text) must be considered. Researchers now note that there is a potential for meaning in the text which is extracted or reconstructed by the reader, using his/her background knowledge in different parts (Wallace 1992, Adams and Collins 1979/1985). Wallace emphasises the social aspect of this process when she points out "We interpret texts in the light of schemas which are constructed through exposure to a range of genres and discourses encountered as members of a number of different social groups" (1992, p. 43). So, what influences our interpretation of texts are all linguistic, schematic and social factors. What Wallace adds to the interpretation of the process are the concepts of genre and register. According to her what we need is to "widen our understanding of context to consider not just the physical setting of the activity but who is speaking to whom and in what set of circumstances" (1992, p. 4).

According to Wallace (1992) written language can be considered from two perspective. It is possible to look at features of text (product) or at the meanings conveyed by the writer and interpreted by the reader (discourse). These two dimensions are also considered by Alderson and Urquhart (1984). Likewise, Smith in his top-down model of reading process proposes two components for reading process: visual information (what is on the page) and the non-visual information consisting of the knowledge of language, subject matter and how to read, what he himself calls "behind the eyeball information" (Smith 1982, p. 10).

Reading and Text

The term "text" is used here to mean a piece of writing which conveys a meaning and has a communicative purpose. This term has been defined by many researchers. Nuttall defines it as "a core of the reading process, the means by which the message is transmitted from writer to reader" (1982, p. 15). According to Halliday and Hassan (1985), "a text is made up of meaning although it looks as if it was made up of words and sentences...It has to be coded in something in order to be communicated; but as a thing in itself, a text is essentially a semantic unit" (p. 10). So, a text can be an act of communication by itself although it can not be described by itself, as Carrell believes. She puts it thus "a text is the outcome of various procedural operations, and as such, can not be adequately described and explained in isolation from the procedures humans use to produce and receive it" (Carrell 1987c, p. 23). Therefore, in the past, language was viewed as consisting of units like words and sentences, while recent views emphasise the whole texts produced in a social context. As Macken, et al point out, a text is "any meaningful piece of language, which is made coherent by the social context in which it is produced" (1990, no.4, p. 6).

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Reading and Discourse

The reader's familiarity with the discourse of the text helps him/her to interpret it. Wallace (1992) uses the term discourse to mean "the meaning which the reader reconstructs from the text during the reading process" (p. 14). But the word meaning of discourse, as Martin defines it, is "beyond grammar, anything to do with cohesion" (personal communication, 1995). As Wallace states, the way the discourses are interpreted in the texts is determined socially not individually since it depends on the beliefs, attitudes, and practices which are a part of any social community, learned by any member of that community. In addition to personal roles, readers have a social role in the process of reading. She points out that reading is not "just to act but to be", that is having a role in reading (1992, p. 19). In fact, Wallace elaborates the point and considers the role of the reader in the wider society or community sharing a set of conventions related to the use of language variety and literacy events affected by the social role of the reader.

Reader and Text Variables

1. Language

Following Wallace (1992), the output of the writer or text can be looked at in terms of physical manifestations of language, that is the features of the writing system, and in terms of features of connected text. Letters and other marks on the page comprise the data which is used by the reader in the process of interpreting the text. All the graphic features which are based on the conventions of the language are physical manifestations of that language. In this regard, features of form and meaning might be looked at at the level of word. Features of connected text are also important to consider. A text

is not a set of words and sentences, rather it is a communicative whole produced by the writer to convey a meaning and used by the reader to interpret that meaning.

Various aspects of a text can be examined: formal features, propositional meaning, the communicative function, as well as the factor of context including the context referred to in the text, the context of its writing and the context of its reading. In other words, form, meaning and function of a text can be recognised in the process of reading. Features of form are the grammatical system of the language and cohesive devices. Propositional meaning represents the writer's ideas and concepts which is in turn interpreted by the reader. The communicative function of a text is the function that is to be communicated through the process of reading and also how different sections of a text are connected together to perform this function. Wallace summarises this part as "Readers are helped in their interpretation of texts both by their knowledge of the principles of word formation and cohesion, and by their ability to attribute an appropriate communicative function to texts and parts of text" (1992, p. 14).

The language proficiency of the reader has turned out to be an important factor in reading comprehension. The reader's linguistic proficiency is referred to as "linguistic schemata". It is the reader's prior linguistic knowledge which plays a significant role in the process of comprehending the text (Carrell 1988a, p. 4). In fact, language is described as "a skeleton, a blueprint for the construction of meaning" (Spiro 1980, p. 245). The reader brings with him/her the knowledge of the language of the text to the process of reading. In this way, the reader needs a knowledge of the conventions of the writing system, the distinctive features of structure and meaning. The knowledge of structure or form includes knowing about letters (and other marks on the page), sentence structure and word classes. Moreover, the genres of texts, each with particular structure and content, help the reader to guess the purpose of the text. In other words, the reader

uses his ability to interpret the function of the text by using his knowledge of cultural conventions.

Some studies have investigated the relationship between language proficiency and reading comprehension and have emphasised the importance of it in reading (Yorio 1971, Alderson, et al 1977 and Coady 1979). Some other researchers believe that low proficiency hinders the reader's transfer of L1 strategies to L2 reading and at least a minimal threshold of language proficiency must be attained before their first language strategies can be transferred to their L2 reading (Devine 1987, Cziko 1978, 1980, Cummins 1979, Clarke 1979, Macnamara 1970, Kern 1989, Clarke 1980, Alderson and Urquhart 1984, Aron 1980, Hacquebord 1989 mentioned in Bossers 1991, Chiramani 1992, Laufer and Sim 1985). Hammadou (1991) affirms the existence of a linguistic threshold for EFL students in reading. The general agreement among these studies is explained by Clarke as "Limited language proficiency appears to exert a powerful effect on the behaviours utilised by the readers...the role of language proficiency may be greater than has previously been assumed" (1980, p. 206). For further information about all these studies refer to the section on studies of the relationship between language proficiency and FL reading.

2. Other Semiotics

The other kind of knowledge that is purposefully put in the text and in turn is used by the readers in their interpretation of text is the knowledge of the nonverbal aspects of the language or other semiotics. John Gibbons divides other semiotics into graphic, gesture and other nonverbal aspects (lecture notes 1993). Of concern to this study or to reading process is only graphic part which consists of signs, drawings, designs, maps, charts, etc.

These semiotics may be used by the writer and contribute to the appropriate interpretation of the text on the part of the reader. This aspect of language has been considered as a part of strategic competence in Canale and Swain's model of language proficiency (1980).

Some researchers have investigated the effect of these semiotics on reading comprehension. Michaels and Walsh state that pictures both help learning reading and are significant part of the meaning making process. The writer uses pictures, graphs, etc. to convey his intended meaning which will be later interpreted by the reader. According to them, "Like print, pictures are meaning systems, and it is important that we learn to unravel the meanings that are contained within them" (1990, p. 3). In this way, the writer and the reader communicate and interact with one another by the visual text that challenges the reader. By interpreting the different kinds of graphics, readers become engaged in the text actively. As Michaels and Walsh point out "readers need to study the visual effects to respond to the layers of meaning that are embedded in the text" (1990, p. 23).

Criticising Ferdinand de Saussure's influence on the dominant semiotics view for a long time, Kress and VanLeeuwen (1990) go further and point out that images can be analysed in terms of textual, interpersonal and ideational structures proposed by systemicists in the grammar of language. To them, as there are ideational, interpersonal and textual structures in language, there are the same structures in visual representations. They argue, "Pictures draw on the semantic system as does language. Since transitivity is a semantic term, it is perfectly appropriate to speak of transitivity in terms of pictures. Pictures have their own specific forms for realising the choices in the semantic system" (1990, p. 73). According to them, authors make an outline of a visual semiotic, which is considering how the images and all nonverbal (visual) aspects of text create meanings and in turn must be interpreted by the reader in the production of meaning.

In another work, VanLeeuwen and Kress (1996) apply Halliday's three metafunctions of language to the field of visual communication and state that diagrams convey communicative functions like all other semiotic forms of language. According to them, any semiotic system must be able to represent experiential, interpersonal and textual aspects of the language. They try to analyse diagrams, maps and charts based on these metafunctions of language.

Some other studies state the popularity of using visual information to enhance reading (Kolers, et al 1979, Moore and Skinner 1985, Levin 1973, Goodykoontz 1936 referred to in Omaggio 1979). The effect of semiotics has been studied in the field of second language reading by Omaggio (1979). He proves that pictures facilitate hypothesis-testing processes in second language readers.

3. Sociocultural and Real World Knowledge

In addition to language and other semiotics, the other variable which is significant both in the production and interpretation of text is sociocultural and real world knowledge of both the reader and the writer. Any text contains some kind of social meaning in it and readers have access to some sources to catch this meaning. According to Wallace (1992), the socially constructed resources available to the readers are genre and schema. She argues that the readers first use their knowledge of genre in order to predict the rhetorical organisation of the text in which a problem is stated, while trying to outline the resolution to the problem. This kind of knowledge is partly knowledge of structure of texts and partly world knowledge.

Genre

The term genre has been traditionally used to mean literary forms like story, novel, etc. But today it is widely used to mean a distinctive type of discourse whether spoken or written (Swales 1990). As mentioned in the model of proficiency, Wallace defines genre as "whole range of culturally recognisable types of language activity" (1992, p. 30). Similarly Martin defines it as "each of the linguistically realised activity types which comprise so much of our culture" (1985, p. 250). He also defines genre as "a staged, goal oriented, purposeful activity in which the speaker/writer engages as a member of culture" (1984, p. 25). Actually, he considers genre as a separate semiotic system which underlies register and language, ie. he views genre as related to the context of culture and register as associated to the context of situation, considering register as "functioning as the expression form of genre, at the same time as language functions as the expression form of register". In this way, register is organised in terms of field, tenor and mode and reflects "metafunctional diversity in its expression form, leaving genre to concentrate on the integration of meaning engendered by field, tenor and mode as systematically related social process (s)" (Martin 1992, p. 495).

Swales also defines genre as "a more or less standardised communicative event with a goal or set of goals mutually understood by the participants in that event and occurring within a functional rather than a social or personal setting" (1985, p. 212). For him, genres are a class of communicative events which have a set of communicative purpose and vary in their prototypicality (1990, p. 52).

As reviewed by Swales (1990), in Halliday's writings, there is no sharp distinction between genre and register, while Martin makes a two-way distinction between them and views genre as a system underlying register; genre is realised by register and register is realised by language. In general, genre can be viewed as a social event and as a discourse. Kress argues that:

genre is a social category in two senses. In so far as language is a social phenomenon and linguistic processes are social processes, linguistic forms are social forms, genre is too a linguistic-social category. Processes involved in the production of genres are social processes. And in so far as linguistic processes and forms code (other) social processes and forms genre too codes social processes and form. (1987, p. 35)

To him, genre is related to the aspects of form of the text caused by different social occasions affecting its production.

The same position is taken by Wallace (1992). According to her, genre is a social event both because of the social roles and purposes of its creator as writer or speaker and also because its communicative purpose is interpretable to particular listener or reader. In this respect, genre can be related to register which is defined as the choices made by the writer to choose a language which is suitable to his purpose, reader and context.

In addition to accounting for communicative function, organisational features, syntax and lexis and social occasions in which a genre appears, as noted by Wallace (1992), both genre and discourse carry a socially determined meaning, ie. "particular discourses are characteristic of particular genres" (p. 32). In this way, the choice of genre helps the writer to choose specific type of discourse (legal, medical). The same view is taken by Kress when he puts it thus, "Texts are in the conjunction of genre and discourse(s)" (1987, p. 37).

Leaving the controversies in defining genre aside, the significance of genre in the interaction between reader and text is of concern to this study. The writer purposefully uses a specific overall structure and language for conveying his purpose in the form of a genre. As Eggins, et al state, genres are functional, not arbitrarily chosen (1987). Thus, genres show how texts are related to the context. As a member of a culture, the writer of a text

employs a genre appropriate to his purpose and readers as members of that culture are expected to recognise and participate in different genres of their culture, ie. they are able to understand purposes, linguistic realisations and the stages of genres. So, the writer of a text has a role in the creation of its genre. For example, the writer of a history textbook, as Kress notes, uses his perception of the task, the discipline and its constitution, and his perception of his audience in his construction of the genre (1985). One way for the reader to understand what the whole text means is to take the genre of that specific text he is trying to interpret into consideration. The first thing that every reader must be aware of in reading is that each genre has a specific context and organisational structure so that he knows what to expect based on his knowledge of genre (Wallace 1986). In fact, genres are employed to pass the ideas on to others, so they are not only formal structures but as Eggins, et al emphasise, they "make meaning" (1987, p. 125).

The importance of genre in comprehension has been emphasised by some researchers. Halliday and Hassan state, "The relevance of structure to recall and comprehension is another important factor. A passage of writing has a better chance of being remembered if its structure is clear" (1985, p. 69). Likewise, Christie (1990) emphasises this importance and states that "A necessary part of becoming a proficient science student is learning to read and write the various genres particular to science fields" (p. 100). To relate genre to reading comprehension, Grabe states "An important part of the reading process is the ability to recognise text genres and various distinct text types" (1988, p. 64).

The effect of rhetorical organisation of the text on reading comprehension and recall has been studied by some other researchers (Meyer 1975, Carrell 1984, Meyer and Freedle 1984, Rumelhart 1975, Stein and Glen 1979 referred to in Perkins 1987, Haynes and Hare 1983, Freedle and Hale 1979). As Johnston (1983) states, the knowledge of the macrostructure of a text facilitates the comprehension of the text in a way

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that the reader reconstructs a model of world situations which describes the relationship between different parts of the text. He concludes that "variations in the structure of text are often related to context and that these variations have distinctive effects on different readers. Reader's failure to effectively deal with these structures and disruptions in them may indicate broader problems which they may face in their reading" (p. 25).

Schema

Another type of sociocultural and real world knowledge that is available to the reader in the reading process is the schema. The idea of using background knowledge has been introduced by psychologist Bartlett (Anderson and Pearson 1984). Theorists like Rumelhart (1980) and Schank and Abelson (1977) have adopted the schema content from psychologists and used it in their theory of comprehension, relating it to the role background knowledge has in reading a text. Schema, as the central concept of interactive models of reading, is defined by Nunan as "The knowledge which we have processed and stored in long-term memory, and which provides a framework whereby we can interpret new knowledge" (1989, p. 114) and which will be brought to the text to be involved in the interaction with it. Likewise, Evans (1967) in an attempt to define schemata states it as "a characteristic of some population of subjects... a set of rules which would serve as instructions for producing a population prototype and object typical of the population" (p.77, quoted in Perkins 1987). Carrell and Eisterhold (1983) define schema as acquired knowledge of the reader the structure of which is called schemata.

In the process of getting meaning from the text, bottom-up and top-down processes interact simultaneously at all levels. The data for processing the schemata is provided by the bottom-up analysis of the text

and the top-down process helps the reader to activate the appropriate schemata which may be predicted. But enough comprehension is not possible without these two processes (Adams and Collins 1979/1985).

Schema have been categorised by different researchers. Carrell (1988a) distinguishes between formal, content and linguistic schema. Formal schema refers to the organisational structure of the text, content schema is the reader's knowledge of real world and linguistic schema is defined as the reader's knowledge about the structure and form of the language. Wilson and Anderson also distinguish between formal and content schemas (1986).

Wallace (1986) categorises schema into genre and topic. She argues that when readers come across a text or part of a text, the first thing which is called up is genre which refers to what kind of text it is. Readers use this kind of knowledge in order to predict the organisational structure of the text in which there is a content. Her discussion of genre emphasises the fact that each genre has a purpose embedded in it, what she herself calls communicative function which should be recognised by the reader. Therefore, readers from one speech community with a shared culture can predict the genre of the text to which they are encountered.

Another kind of world knowledge accessible to the reader is knowledge of the topic which is the subject matter of the text or what the text is about (Wallace 1992). According to her, readers "connect words across the text to build up a sense of what the text is about" (1986, p. 43). Carrell calls this type of schema "content schema" to mean the reader's knowledge of the topic which is read.

When the reader starts reading a text, the knowledge of the topic which is both a cognitive and a social construct helps him to understand the text. In this relation Wallace argues, "Schemas are not only a cognitive construct to do with the mental organisation of concepts but also social-psychological constructs which allow us to attach particular values and

attitudes to that knowledge. They are shaped by the sorts of social experiences which readers bring to texts" (1992, p. 37). So, background knowledge of the reader has a role in reading comprehension. As Anderson (1985) states, background knowledge determines the degree of comprehension, learning and remembrance of a text. Although the availability of schema is not enough for comprehending a text, many studies have researched on the effect of background knowledge on comprehension and have documented the significant role of schemata in the process of reading (Anderson, et al 1977, Bransford and Johnson 1972, Pichert and Anderson 1977, referred to in Anderson 1985, Freebody and Anderson 1983, Stahl, et al 1989).

In second language reading research, the effect of background knowledge has also been focused and most of the studies in this area point out that a reader can comprehend more of a text if he has familiarity with the topic by experience, by previous reading and by the knowledge of the subject matter of the reading text (Carrell 1983,1987a, Hudson 1982, Johnson 1982, Alderson and Urquhart 1985/1988, Nunan 1985, Pritchard 1990, Hammadou 1991, Steffensen and Joag-Dev 1984, Anderson and Pearson 1984, Hale 1988, and Carrell and Eisterhold 1983).

4. Social Context

Another variable which is important in both producing and processing of the text is social context as a knowledge surrounding both the writer and the reader. According to Goodman, "Reading, like all language, operates in a social context that includes readers and writers" (1988, p. 20).

Different taxonomies are given for the divisions of context. John Gibbons divides it into wider, immediate and scope. He includes sociolinguistic profile of language, sociocultural and physical context in

wider context, while immediate context is divided into sociocultural and physical (lecture notes 1993). Wallace divides it into immediate, institutional and wider social context (1992).

Immediate Context

Immediate context is the environment in which a text is written and read. John Gibbons divides immediate context into sociocultural and physical. Physical context refers to time, place and even the weather of the environment in which the writer writes and the reader interprets the text. Sociocultural aspect of this context includes characteristics of the participants and also the event. The participants, roles, characteristics such as age, sex, class, occupation and ethnicity, and proficiency are the factors significant to consider. The event refers to both the topic and also what is happening, all of which are crucial in determining the meaning of the text (lecture notes 1993). Wallace asserts that not only the situation or circumstance in which a text is read but also the factors which had a role in the process of producing it and the participants in the event affect how we respond to the text as readers. According to her, "even variables such as time of day, or year may be crucial" (1992, p. 26).

Institutional Context

In the process of interpreting a text, not only the immediate context but also the institutional context play a role. A text is read in a situation behind which there are values and norms of an institution such as classroom, university, etc. According to Wallace, "Our knowledge of a society's key concepts helps us to anticipate when and where we might be likely to come across particular messages" (1992, p. 27). In writing a text, the writer has

some considerations in his mind which are important in the process of producing the text. Kress highlights this importance when he talks about the writer of a history textbook. The writer has in mind that the high school textbook differs from university or academic textbooks. So, "The general layout of text seems designed for an audience which is assumed to have a limited interest in history and a limited ability to concentrate on extended texts, for whom therefore the text needs to be visually segmented in a certain way" (1985, p. 27).

Wider Social Context

Wider social context consists of sociocultural aspect of a society, the most important of which are systems of behaviour and systems of belief (world view/values/ideology) which lie behind any text. These complex set of values influence the way the reader responds to the text. According to John Gibbons, wider social context can be divided into sociolinguistic profile of language, sociocultural and physical aspects of the society. Sociolinguistic profile of language includes those aspects as demography, current uses, origin, tradition and spread of the language. Sociocultural aspect of wider context can be divided into sociocultural nature and sociocultural structure. Systems of behaviour, beliefs and history are important components of sociocultural nature. And institutions, power distribution and valued characteristics make up the structure. Physical aspect of wider social context consists of the geography, ecology and climate of the social context in which the text is produced and interpreted (lecture notes 1993).

Readers need all these levels of contextual knowledge in order to be able to interpret the text to which they are encountered. As Wallace states, "A context in which reading occurs provides much of the meaning" (1986, p. 22). Any kind of written text is written in a context and read and

interpreted in another context which affects the way it is produced and interpreted. So, no text can be independent of the context in which it has been written and then interpreted.

The importance of bearing the context in mind by the readers has been emphasised by some researchers. As Fairclough claims, all readers always have some kind of context in their minds when they are interpreting the text (1989). Likewise, Malinowski argues that readers have to relate the texts to their context of situation (register) and context of culture (genre) to be comprehended (1923,1935 referred to in Martin 1992). Firth also considers context as a requirement for getting the meaning of the text (1935/1957, referred to in Martin 1992). As Iser (1978) states, although readers may be involved in similar activities when reading, interpretation of texts may be quite different. He points out that readers interpret texts differently in different times due to the change of context. For example, interpreting a text in private may be different from when the reader is meeting other readers.

What Halliday calls register or context of situation, consisting of field, tenor and mode is "the configuration of semantic resources that the member of the culture associates with a situation context. It is the meaning potential that is accessible in a given social context" (1978, p. iii).

5. Skills and Strategies

The only variable which is unique to the reader and is involved only in the process rather than the product of reading is skills and strategies. The terms skill, strategy, style "have been used inconsistently among researchers of reading process and product". The term "style" is nowadays well established to refer to "reader's behavioural response to text" (Williams and Moran 1989, p. 222). Some of the researchers prefer to use one terminology

and exclude the other (Tomlinson and Ellis 1987, referred to in Williams and Moran 1989), while some others use the two terms interchangeably (Taylor, et al 1986)

Skill and strategy can be differentiated in that skill is acquired subconsciously and is automatised in the reader while strategy is consciously employed for problem solving (Olshavsky 1976/1977). Folman (1990) defines strategy as "mental processes that learners consciously choose in order to accomplish reading tasks" (p. 6). He actually divides learning strategies applicable to reading into reading strategies, universal skills and language specific reading skills. Barnett defines reading strategies as "mental operations involved when readers approach the text effectively and make sense of what they read" (1988, p. 150). It can best be defined as actions utilised deliberately by the readers in their attempt to reconstruct the meaning of the text.

Regarding reading as a complex process, some researchers have analysed reading process into a set of skills (Rayner and Pollatsek 1989, Carpenter and Just 1986, Carr and Levy 1990, Grabe 1991). But the unitary view of language, proposed by Goodman (1971), Smith (1971), Lunzer and Gardener (1979), emphasising the inability to distinguish different skills in an effective reading, has led to the use of strategy rather than skill by some researchers. According to Wallace, the effective reading requires the use of some strategies based on the reader's purpose, text type and context (1992).

A variety of strategies are proposed by theorists such as skimming, scanning, guessing word meaning from context, reading for meaning, following references, recognising main ideas and predicting. Barnett divides effective reading strategies into "text level" and "word level" strategies (1988). Block (1986) proposes "general comprehension" and "local linguistic" strategies of reading. Close to these binaries is Barnard et al's "global" and "local" strategies (1980). Other researchers such as Olshavsky (1976/1977) categorise the strategies into two levels like those suggested by

the above mentioned writers. Fisher and Smith (1977) use the terms "text processing" and "word processing". Strategies related to the whole text include using real world knowledge, prediction, understanding the purpose of reading, skimming, scanning, and the use of titles and illustrations. On the other hand, strategies related to words are recognition of the grammatical category, use of context for guessing the meaning of vocabulary and following references (Barnett 1988).

The readers who are equipped with efficient strategies in reading comprehend the text better and more effectively, a fact that has been investigated in many research. In this respect, some pedagogical approaches are suggested to help the readers approach the text successfully. The first and second language strategies used by poor and good readers have been investigated in different studies (Garner 1987, Cziko 1980, Johnson 1972 mentioned in McLeod and McLaughlin 1986, Nist and Mealey 1991, and Carrell 1989b).

Among the studies which examine L2 strategy use and/or list useful reading strategies are Bernhardt's (1986), Block (1986), Hosenfeld, et al (1981), Lee and Musumeci (1988). Barnett (1988) concludes that the students who are aware of the context and consider it in the process of reading understand better than those who do not employ this strategy. Some studies about the relationship between L2 proficiency and reading comprehension indirectly examine the use of strategies in reading. For example, Clarke (1980) states that low level of proficiency of L2 readers short circuit a reader's transfer of L1 reading strategies to L2 reading. Likewise, Hauptman (1979) finds in his study that students with low L1 reading strategies are not often able to transfer or use them in their L2 reading.

In general, the skills approach to reading views learning to read as building up different skills, emphasising the inability to perform discrete tasks and having nothing to do with reconstructing the meaning of the text.

But strategy-based approach maintains a unitary process view to reading, not being able to be divided into different skills.

INTERACTION OF LANGUAGE PROFICIENCY AND READING

The interaction between certain elements involved in the model of reading as well as their overlap with the components of the model of language will be discussed here. The model of reading developed in the study will be presented at the end of this part.

Reading is a complex process involving many cognitive skills, cultural knowledge and experience on the part of the reader, as well as different characteristics of the text, independent of the reader. In the interaction between the reader and the text, comprehension is influenced by both the reader's and text-related characteristics. The words printed in a text alone do not lead the reader to comprehension. Restructuring the meaning of the text requires an interactive process between the content of a text as well as the knowledge that the reader brings with him/her to the reading process. In other words, the meaning of a text is reconstructed in the interaction between reader and text with the contribution of both to the process. According to Carrell :

> Reading is a multifaceted, complex, interactive process which involves many subskills and many types of reader, as well as text variables....No longer can reading in a second language (or reading in general, for that matter) be viewed as a passive process. Nor is reading simply an active process; rather efficient and effective reading requires a true interaction between reader and text. No longer can reading be viewed as simple mapping of (oral) language skills into another medium....No longer is the text or even a text analysis efficient to explain reading difficulties; everything about the reader and

reader's background ... is relevant to successful
reading and reading comprehension . (1987b, p. 2)

Since we are dealing with how language is used in the written form
in the process of reading, we need a model of both language and reading in a
way that both of which show the relationship between language, reader, text
and context. Both models put text in its context of situation (register) which
is in turn put in context of culture (genre), each level affecting the writing
and the reading of the text. As explained before, the model of reading on
which this study is based is an interactive one, using Wallace's Reading
(1992) as a basis to make an efficient model. An attempt is made to include
those factors which have been neglected in previous top-down and
interactive models.

All the variables discussed in the previous section can be brought
together to make a model of reading in which both individual and social
perspective are taken into consideration. A variety of sources embedded in
the text as well as in the reader interact together to make the meaning of a
text. In this way, reading is viewed in terms of both product and process.
Texts are only sources of meaning which should be drawn out in an
interaction with the reader. The term interaction in this study is used to
mean that readers use a variety of knowledge simultaneously in their process
of interpreting the text. In fact, there is interaction between the knowledge
which is obtained through bottom-up decoding and what is provided by top-
down analysis of the text. So, both reader and text contribute to the process.
In this way, the interpretation of a text is a bi-directional interaction between
reader and text in which "text-based and knowledge-based" processing are
involved (Carrell 1988d, p. 101).

The variables which are represented in the text by the writer during
the production of text and in turn will be used by the reader in the
processing of the text are language, other semiotics, sociocultural

information and assumptions of the writer, and the social context of the writing event. And the reader variables significant in the process of getting meaning from the text are reader's language proficiency, his/her proficiency in the use of other semiotics, sociocultural and real world knowledge, the social context surrounding the reading event and skills and strategies.

There is interaction between the language of the text and language proficiency of the reader, between other semiotics in the text and the reader's proficiency in other semiotics, between the social or sociocultural assumptions of the writer embedded in the text with the reader's sociocultural and real world knowledge, and between the social context surrounding the writer in the writing event and the social context surrounding the reader in the reading event. In addition to all these variables, the reader's skills and strategies contribute to the process of interpreting the text. The implication of this model (presented at the end of this chapter) is that the ability to interpret a text is to do with a complex of variables, using different clues to fit the parts, combining them together to determine the meaning of the text. A close look at this model of reading reveals that there is a connection between its components and those of the model of proficiency, or rather between the systemic view of language and this model of reading. This connection is revealed through the overlaps between the components of both models (reading and proficiency). Firstly, all different components of both models work simultaneously to help the reader or language user to understand, use and comprehend. In the model of proficiency, different components of language, ie. graphology, lexicogrammar, semantics, register and genre help the language user to make choices to create his/her meaning. So, the whole text is considered rather than individual sentences. Likewise, in this model of reading, the text is considered in its connected form or discourse. Different variables of language, other semiotics, sociocultural and real world knowledge, consisting of genre and schema, and register are all processed

simultaneously to help the reader comprehend the text. In the language section of the model of reading, features of the writing system as well as formal, propositional and communicative function aspects of the language are processed. As Derewianka (1992) argues, these divisions are roughly approximate to graphology, lexicogrammar and semantics together with the meta-functions of language. These three terms are referred to as graphophonic, syntactic and semantic components of language in miscue analysis. The way these components are related is seen differently in different theories of language. She points out, "In miscue analysis, they are seen as overlapping components of language which have a similar nature and status" (p. 7) with no direct relationship between them. But in the systemic functional model of language, "they are seen in terms of a relationship of 'realisation'....That is, the system is driven by the semantic level, which is realised by the lexicogrammar which is realised by the phonology/graphology" (p. 7). In other models of language, the relationship between semantics and grammar (syntax) is arbitrary but in a systemic view of language, grammar is a mapping mechanism and a resource for meaning and is related to the social process. With regard to semantics, other models' formal semantics correspond only to the ideational concept of semantics in a systemic view, but not the interpersonal and textual.

According to systemicists, language is comprehended in the context of situation (register) and context of culture (genre). In both the model of proficiency and the model of reading in this study, it is implied that the language system is not independent and there is a close relationship between language and the culture in which it is produced. In other words, the linguistic resources accessible to us to understand and make the meaning are dependent on the context of situation as well as to that of culture. In order to comprehend how a text is related to its context, both register and genre concepts are significant. Likewise, for a reader, the text should be put into and related to its context and genre in order for it to be comprehended.

Here, the text is considered and comprehended when it is put in both its immediate context and its wider context (culture). The immediate context of the text can explain about what is happening and the nature of social action (field), the role the language has, its symbolic organisation and function (mode), and the nature of participants, their roles, status and the kind of role relationship (tenor). Divisions of schema in the model of reading overlap with different variables of the language model. Content schema or topic is related to field but the difference is that here field is a system of choices which are made in particular social contexts. These choices are realised in the grammar as well as the vocabulary of the text. Therefore, content schema is a kind of psychological and mental concept while field includes a cultural meaning. Linguistic schema is related to lexicogrammar but again is not exactly the same since it does not contain register and genre and it is only the knowledge of the form of language, ie. its structure. But in a systemic view, lexicogrammar makes meaning, ie. it construes discourse semantics. In fact, lexicogrammar is a representation of three types of meaning, experiential, interpersonal and textual which have in turn a strong link with three components of context, ie field, tenor and mode. Formal schema is related to genre but it is viewed in reading as the overall shape of the text. In a systemic view, genre means the same thing except that it includes a larger variety of form, and its social aspect is emphasised. In other words, genre is described in terms of how the text achieves its social purpose. In sum, some of the traditional models do talk about tenor and mode, but in them, there is not a direct linkage between word and meaning, and the sentences only express propositional meaning. In a systemic view, there is no duality between form and content. Meaning is made in all levels.

In a systemic view, register which consists of field, tenor and mode is referred to as the "configuration of semantic resources" able to be accessed within a certain context of situation by the members of that culture (Halliday

1978, p. iii). In the model of reading, there is an interaction between the writer and reader registers. The writer's intention determines his choice of field, tenor and mode in a way that is comprehensible to his readers. In turn, the knowledge of the field, tenor and mode on the part of the reader, together with other levels of knowledge, help him/her to comprehend the meaning of the text.

In both models, it is revealed that register is embedded in the genre as a vehicle for conveying the different purposes of the culture. In the genre of the text, the social conventions and established beliefs, thoughts and values are expressed through the choices of field, tenor and mode, as emphasised in the model of reading.

In general, both models of proficiency and reading emphasise the fact that full understanding of a text requires significant factors such as register and genre to be taken into account, what is neglected in other previous models. What is emphasised in these two models is considering text, function, meaningfulness and rhetoric rather than sentence, form, grammaticality and logic, as expressed by systemicists (Matthiessen and Halliday, in press). The model of reading developed in this study is presented in the next page:

WRITER

TEXT

READER

written language
- word level
- text level
- form
- propositional meaning
- communicative function

other semiotics (graphic)
- picture
- sign
- drawing
- diagram
- map
- chart
- etc

social context
- immediate
- institutional
- wider

sociocultural information & assumptions
- genre
  - as social event
  - as discourse
- schema
  - genre schema
  - topic schema

language proficiency
- word level
- text level
- form
- propositional meaning
- communicative function

proficiency in other semiotics (graphic)
- picture
- sign
- drawing
- diagram
- map
- chart
- etc

sociocultural & real world knowledge
- genre
  - as social event
  - as discourse
- schema
  - genre schema
  - topic schema

skills and strategies
- word level
- text level
- transferred from L1

social context
- immediate
- institutional
- wider

Model of Reading

STUDIES ON THE RELATION BETWEEN LANGUAGE PROFICIENCY AND READING

Reading in the first language has been researched as a complex process involving many knowledge sources. The complexity of this process as the source of many problems of SL/FL readers has been more debated in second language.

After Alderson's call (1984) for more research in reading comprehension in SL/FL context and his famous question, "Reading in a foreign language: a reading problem or a language problem?", many studies started to investigate the same issue. In the studies concerning the problems of ESL or EFL students in reading comprehension, researchers maintain different views. Some argue that reading ability in a second or foreign language is crucially dependant on the learner's first language. In other words, they believe that SL/FL reading is more contingent on higher level skills, the contention that renders support to the views of universal reading strategies as well as to the linguistic interdependence hypothesis. According to this view, there is a lot in common in first and second language reading. However, some others believe that proficiency in the second or foreign language is the major determinant of the reading ability in that language, ie. lower level decoding is more important in the process of reading. Still others believe that SL reading is the function of both first language reading ability and proficiency in the target language. In fact, they believe that a minimum command of language is necessary in order to help first language reading habits transfer to second language reading, termed as "short circuit" or "linguistic threshold hypothesis". A review of these studies will help understand the state of the art.

Among those who argue that second or foreign language reading ability is a function of learner's first language rather than the proficiency in

the target language are Coady (1979), Hudson (1982), Jolly (1978), Devine (1988a) and Rigg (1977). Under the influence of Goodman's "universality of reading", these theorists believe that L2 reading problems are due to poor reading strategies in the first language. To them, there is no need to teach reading skills to SL/FL learners.

Jolly (1978) attributes the problem of SL reading to the reader's first language rather than his competence in SL. He argues that failure in reading in a SL is due to lack of old skills or the inability to transfer those skills to SL reading. To him, foreign language reading is not learning new skills but it is the transference of old ones, ie. those skills acquired in the first language. Similarly Coady (1979) contends that SL reading is a reading problem not a language problem. His views are in line with Goodman's (1973) "reading universal hypothesis" as well as with those researchers who believe that reading process is learned only once without any need for relearning it (for more detail refer to the chapter of discussion). He suggests that "we must teach reading skills which should have been learned in first language instruction" (1979, p. 12). Some studies in bilingualism support this view. For example, Cummins (1979) claims that the level of the first language proficiency is partially responsible for the development of SL proficiency. This implies that there is a relationship between one's first and second language reading.

Although the psycholinguistic view of reading dominated the research on reading up to 1970's, some studies failed to find a strong relationship between L1 and L2 reading. This led to a new interest in the role of L2 proficiency in L2 reading (Devine 1988a). Therefore, some researchers believed that second or foreign language proficiency of the students was a much more important predictor of learner's success in reading in the target language (Yorio 1971, Alderson, et al 1977, Devine 1987, Hock 1990). While considering that both first language and proficiency are

important, Yorio (1971) contends that the reader's first language knowledge guides him/her to pick up graphic cues and relate them to syntactic and semantic cues.

Carrell also studied the relative importance of L1 and L2 reading proficiency in FL speakers of English at different levels of proficiency. Her results show that both the first language of the readers and their SL proficiency are important factors in SL reading while the relative importance of each one was due to other environmental factors (1991). For a full detail of this study refer to the chapter of discussion, page 213.

Consistent with the view that language proficiency or knowledge affects reading in a SL is the view that limited knowledge of SL prohibits readers from using contextual cues efficiently. The use of contextual cues is found to be important to reading process and the inability to use such constraints leads to inadequate reading (Cziko 1978, Chihara, et al 1977, Cooper 1984).

As an example, Cziko (1978,1980) tried to compare native speakers of English with high and low level proficiency French students while reading in English. He came to the conclusion that native speakers and also high level proficiency students were more sensitive to syntactic, semantic and discourse constraints of the text but low proficiency students relied on bottom-up strategies rather than on textual information or higher order schemata. According to him, "a relatively high level of competence in a language is a prerequisite to the ability to use discourse constraints as a source of information in reading" (1978, p. 484). To him, most of the difficulty in SL reading may be caused by "the inability of the SL readers to make use of these contextual constraints [ie. syntactic, semantic and discourse constraints]" (p. 485). In another study, he found that there is a relationship between reader strategies and the level of proficiency in the

target language. Then, he suggested that in the case of sufficient target language, good reading strategies can be applied in a SL/FL (1980). But the problem with his study is that he did not work with the same individuals at different levels. Moreover, he did not measure their first language reading ability, as remarked by Alderson (1984).

In relation to previous works, the studies on the L2 reading process and the relationship between language proficiency, L1 reading and L2 reading have led some researchers to believe in a SL competence or "ceiling" necessary for successful SL reading. So, they argue that both first language and second language proficiency are necessary and equally important, because below that threshold, the first language strategies can not be transferred. Clarke's study (1979, 1980) is an example that provides some evidence about the threshold hypothesis (for a full description of his study refer to section 6 of chapter 5). But according to Alderson (1984), her results can not be inclusive since the role of language proficiency can not be determined in the "ceiling" unless the subjects are at different levels of L2 proficiency. Research about such questions requires subjects at different levels of SL/FL proficiency, while this is not true with Clarke's study. In all, the gist of Clarke (1979, 1980) and Cziko (1978, 1980) and more recently Grabe (1986) and Laufer and Sim's (1985) studies is that inadequate knowledge of language or proficiency in L2 may limit the reader's ability in reading in L2, causing him/her to rely on lower level strategies and blocking him/her to use higher level processing in reading in SL.

In spite of these shortcomings in Clarke's study, his results have been supported by some other researchers. For instance, Cummins argues that cognitive and academic progress is possible only after the bilinguals have reached a "threshold" in their SL competence. He expresses his interdependence hypothesis as: "To the extent that instruction in Lx is

effective in promoting proficiency in Lx, transfer of this proficiency to Ly will occur provided there is adequate exposure to Ly (either in school or experiment) and adequate motivation to learn Ly" (Cummins and Swain 1986, p. 87). It is here that Cummins states that this threshold must be seen not as an absolute term, but as varying from reader to reader and from task to task.

Having the same idea about the nature of threshold as Cummins, Alderson (1984) argues that "many questions remain to be answered..." about the nature of threshold, the degree to which it is syntactic, semantic, conceptual or discoursal, the existence of different thresholds for different readers and different texts (p. 20). It seems that finding an answer to these questions needs far more research. Finally, Alderson contends that FL reading is both "a language problem and a reading problem, but with firmer evidence that it is a language problem, for low levels of FL competence, than a reading problem" (1984, p. 24).

Some shortcomings are seen in all the studies done by Jolly (1978), Coady (1979), and Yorio (1971). Clarke researched on the readers at the same level of proficiency, giving rise to the question of what role proficiency plays in the SL reading. Cziko has not done his research on the same individuals and also he gives no evidence of the subjects' first language ability. As argued by Alderson (1984), the major problem of these studies is failure to gather enough information in reading ability in FL, reading ability in first language and information about the level of proficiency in the same individuals. The other problem is that most of these studies have been quantitative rather than qualitative. As highlighted by Bossers (1991), in most of the studies, one of the 3 variables (L2 reading ability, L1 reading ability and L2 proficiency) is roughly estimated, for example, the L2 proficiency of the students is determined on the basis of

the students' instructional level (Carrell 1991) and sometimes one variable is completely ignored (Cziko 1978, 1980).

But, as Johnston (1983) argues, the complexity of reading behaviour requires the use of different strategies in order to help the reader build the meaning the writer has intended in the text. According to him, therefore, reading comprehension can be assessed by considering the readers' performance based on the information in a text used in a context. Moreover, there is a need to focus on the process of reading not product only, while considering all the variables involved in reading comprehension (refer to the model of reading in this chapter). Most of these studies do not consider all the variables. For example, Carrell (1991), does not take the difficulty of the text and its relation to proficiency into account. The importance of genre and register is neglected there. So, in such studies a wide variety of factors such as characteristics of the text and the reader's proficiency and background knowledge, should be taken into account.

STUDIES ON THE INTERACTION BETWEEN READER ABILITIES AND TEXT CHARACTERISTICS

Some studies have been undertaken to assess the influence of reading ability and difficulty of the text on the types of errors in oral reading by native language children. For example, Clay (1968, 1969) worked with beginning readers in their first language in order to investigate their use of grammatical cues. She analysed the oral errors of four levels of reading ability and found that there was no difference in the proportion of syntactic errors across levels. She also found that more skilled readers' sensitivity to grammatical cues was more than less skilled ones.

Similarly, Weber worked on first grader's oral reading errors. She came to the conclusion that both poor and good readers used graphic, syntactic and semantic cues to some extent but good readers did not differ from poor ones in the proportion of syntactic and semantic cues (1970a, b). Kibby (1979) also analysed the oral errors of 4th, 5th, 6th, and 7th grade readers on two paragraphs with varying levels of difficulty. He found that less grammatically acceptable errors were made on more difficult passages.

In a more interesting study, Blaxal and Willows (1984) investigated the effect of reading ability and difficulty of material on the types of errors made by second grade children. They claimed that when the difficulty of the material increased, the number of grammatically and semantically acceptable errors decreased. They also found a significant interaction between level of the difficulty of text and reading ability of the reader.

The fact that difficulty of the text does have an effect on reading has been documented in many studies (Paris and Myers 1981, Erickson, et al 1985). As an example, Baxter (1992) tried to find the interactive effect of reader ability and text difficulty on comprehension monitoring. In his study, he did not use the identical passages for all students in order to create a situation in which poorer readers were not reading a text that was relatively more difficult for them than for the good readers. The texts he used were of three levels of difficulty: (2nd grade for all students [easy passages], 3rd grade for below average readers and 6th grade for above average readers [ability appropriate passages], and 4th grade for below average students and 6th grade for above average readers [difficult passages]). In his study, he found that difficulty of material had no discernible pattern of effect on comprehension monitoring performance of the subjects. His study was another example that questioned the validity of readability formulae for determining text difficulty.

The difference in the use of strategies in texts of differing levels of difficulty has also been investigated by some researchers. It has been claimed that as the material gets more difficult, the subjects use less strategies and have a less tendency to use higher level strategies (Pikulski and Shanahan 1982, Bristow 1985, Williamson and Young 1974, D'Angelo and Mahlios 1983, Biemiller 1979, Olshavsky 1978).

The review of literature indicates that many researchers have tried to investigate the effect of text difficulty on reading, using a readability formula to decide about the difficulty of the text. But most of these studies have been done on children or adults reading in their mother tongue. Only a few of the studies research readers reading in English as a FL. The common point in all of these studies is that they are based on a very limited model of language. As implied by our model of proficiency in this study, all linguistic aspects contribute to the difficulty of the text. It is not only structure or vocabulary but also conceptual aspect of the text as well as its register, congruency or incongruency, that makes a text difficult to comprehend. Therefore, all aspects of language from lexicogrammar to semantics, context of situation and that of culture might be a source of difficulty. Obviously, many of these factors which affect the complexity of the text can not be measured by readability formulae. In the following section, a review of some most common readability formulae used in research about reading will indicate the point that these formulae are not adequate for the purpose of measuring the difficulty level of the texts.

READABILITY FORMULAE

The term readable as defined by Klare (1984) "may refer to any one of three characteristics of reading matter: 1) legibility of either the handwriting or the typography, 2) ease of reading, owing to the interest

value of writing, 3) ease of understanding, owing to the style of writing". He later adds that "usage now clearly favours the third meaning, especially in the field of reading" (p. 681). The control of the difficulty of reading instructional material started gradually in the first half of the 19th century (Venezky 1984). Readability formulae were instruments used to determine the difficulty level of text helping the teachers to predict the amount of correct answers to a passage questions given by particular subjects. Although at the end of this century, sentence length and type were used as indicators of style, the length of the word as measured in the number of syllables were suggested later in the readability formulae (Venezky 1984).

The history of readability as used in the educational research dates back to 1920s. According to Chall, readability research started from two sources: the first being "vocabulary control studies", focusing on the vocabularies used for reading textbooks efficiently, and the second being "readability measurement", concerned with difficulties in comprehending text books. Having the same purpose, both vocabulary control studies and readability measurement were attempting to find an objective way of determining the difficulty of materials not with the aim of estimating difficulty but making the texts easier to read (1988, pp. 2-3).

As reviewed in Chall (1988), in early years of studies related to readability (1922 to 1926), the focus has been on such vocabulary aspects as difficulty, diversity and range. During these years, the criteria for deciding the vocabulary difficulty had been readers and frequency word lists such as Thorndike's (1921). But it was in later periods of readability studies which formulas' focus turned to different factors like syntax, interest and organisation (1928 to 1939). In these years, sentence and word lengths were used as surface features of the text and then put into regression equations to predict the level of the difficulty of texts.

As Klare (1974-5) claims, before 1960, there had been at least 30 readability formulae. Although there are different types of readability

formula, only a few variables at the level of word or sentence are included in them. According to him, these variables include (1) word frequency, (2) number of letters in a word, (3) number of syllables in a word, (4) number of words in a sentence, and (5) number of sentences in a text.

As shown in the following examples, the variables included in the studies related to readability have mostly been linguistic. As Klare (1984) states, in all these attempts usually a number of passages are chosen and then by using some multiple choice questions or cloze testing, the level of the difficulty of these passages are determined. Some linguistic units like the number of words, sentences, or clauses are chosen based on which the passages are analysed. Then, by putting the best predictors of difficulty in a regression formula, the readability formula is made. Chall (1958) and Klare (1984) claim Lively and Pressey (1923) to be the developer of the first readability formula. In their attempt to make a formula, they tried to determine the vocabulary difficulty of a book by taking a sample of 1000 words from the book based on The Thorndike's (1921) Word Book of frequency.

Later, Vogel and Washburne (1928) tried to make a readability formula, using four different variables calculated in a sample of 1000 words. According to Venezky (1984) and Klare (1984), this formula was a basis for most of the readability formulae which followed. Their formula was:

Reading score = 17.43 + .085 w + .101 p + .604 x - .411 s

w = no. of different words in the 1000 word sample

p = no. of prepositions in the 1000 word sample

x = no. of words in the 1000 word sample not on the Thorndike (1921) list

s = no. of simple sentences in a sample of 75 sentences selected from the text.

Gray and Leary (1935) were one of the other earliest attempts to create a readability formula. Actually, they were the first researchers who

suggested word frequency and sentence length as the factors which could be the determinants of text difficulty. In the beginning, they had 44 factors included in their criterion which was Adult Reading Test. But the factors were reduced to 20, and then into 8. They finally put 5 factors in their formula which gave a multiple regression of .65 with their adult Reading Test. Their formula is as follows:

$$x1 = -.01029 \ x2 + .009012 \ x5 - .02094 \ x6 - .03313 \ x7 - .01485 \ x8 + 3.774$$

x1 = average comprehension score

x2 = number of different hard words not on Dale list of 769 words

x5 = number of personal pronouns

x6 = average number of words per sentence

x7 = percentage of different words

x8 = number of prepositional phrases

This formula is an interesting one since in spite of its focus on style variables, it is a crude measure of tenor, ie. degree of formality (no. of personal pronouns) and also mode, ie. context embedding.

Later, Washburne and Morphett (1938) tried to develop a formula including three factors which were later reduced to syntactic and semantic factors. The following part shows how 5 styles of Gray and Leary formula is reduced to syntactic and semantic factors in this formula:

$$x1 = .00255 \ x2 + .0458 \ x3 - .0307 \ x4 + 1.294$$

x1 = grade placement

x2 = number of different words

x3 = number of different uncommon words not in Thorndike's 1500 words

x4 = number of simple sentences in 75 sample sentences

Immediately after Washburne and Morphett, another formula was developed by Lorge (1939). This formula focuses on the same factors of syntactic and semantics:

$x1 = .07 x2 + .1301 x3 + .1073 x4 + 1.6126$

$x1$ = grade placement

$x2$ = average sentence length in words

$x3$ = number of prepositional phrases per 100 words

$x4$ = number of different hard words not on the Dale 769 word list

After Lorge, the readability formulae were limited only to two variables of syntax and semantics. During this period, the use of readability formulae became much more popular especially by teachers who used them to match their texts to the students' abilities. Moreover, despite their failure to consider some text variables, for many years, the most popular way of determining the difficulty of the text was using one of a variety of readability formulae. Among those formulae which focused on the difficulty of vocabulary was the one developed by Dale and Chall (1948). Their formula was widely used in the field of education. Two counts are the basis of this formula: average sentence length and the percentage of unfamiliar words. The criteria used for developing this formula was the McCall-Crabbs passages. Their formula is as follows:

$xc50 = .1579 x1 = .0496 x2 = 3.6365$

$xc50$ = reading grade score of pupils who can answer correctly one-half the questions on a Mccall-Crabbs passage

$x1$ = percentage of words not in the Dale list of 3000 words

$x2$ = average sentence length in words

As shown in this formula, what they emphasised was efficient use of a word list together with sentence length.

Some of the readability formulae developed later focused on long words and the length of sentences. Among these formulae are those of Flesh (1948) and Fry (1968). After Dale and Chall, Flesh (1948) was the researcher who included variables other than style difficulty. His formula known as Reading Ease Formula (1948) focuses on the use of syllable length and sentence length:

RE = 206. 835 - .846 WL - 1.015 SL

RE = reading ease, on a scale from very easy (100) to very difficult (0)

WL = average word length, in syllable

SL = average sentence length, in words

Claiming that other formulae are not applicable to materials written for levels below Grade IV, Spache (1953) devised a new formula for primary grade reading materials. Adding nothing new to the previous formulae, his formula is as follows:

Grade level of textbooks = .141 average sentence length per 100 words +
.086 words outside the Dale "easy word list"
of 769 words + .839

In 1963, the authors like Danielson and Bryan emphasised the ease of use in readability formulae by developing a computerised readability formula which was recommended for larger scale uses. They used characters instead of syllables and words in their word and sentence counts. Their formula is as follows:

DB#2 = 131.059 - 10.364 cpsp - .194 cpst

DB#2 = score on a scale from 0 (difficult) to 100 (easy)

cpsp = characters per space

cpst = characters per sentence

According to Klare (1984), among all readability formulae, Fry's formula "is one of the most, if not the most, widely used of all current methods" (p. 690). In comparison with other formulae, Fry's readability formula is easier to use. In a 100 word sample, the number of syllables and words are counted and then entered into the graph which shows different reading grade levels. The greater the frequency of long sentences and long words in the 100 sample taken, the higher the grade level, ie. the more the difficult the text.

In later years, some researchers suggested cloze tests as a much better technique to determine the difficulty of the texts (Oller 1979, Klare 1974-5, Wallace 1992). Following different criticisms of the current readability formulae, other variables such as passive verbs, the frequency in the use of subordination and prepositional phrase have been investigated to be included in readability formulae. Since these variables did not adequately correlated in practice with the criteria of readability, they were not used as commonly as readability formulae. Seldon (1981) states that only due to the ease of use and also the strong correlation obtained from such variables as word length and frequency and sentence length, they are most widely used in readability formulas. In all, the common observation in all these formulae is that they do not go to the reasons and/or sources of the problem, so they do not get adequate measures. Their analysis is superficial and form-based. The variables included in readability formulae do not adequately reveal the nature of the interaction between text and reader variables. In fact, what readability formulae are based on is a correlation between causes of difficulty in comprehension but they are not concerned with the actual sources of difficulty. A good criterion for establishing difficulty must define the sources of difficulty based on a complete model of language.

Some text variables have been found to cause difficulty in comprehension by some cognitive psychologists and linguists. As to the reading problems, research has mentioned vocabulary and structure to be the sources of difficulty in the texts. Some researchers believe that vocabulary is a greater source of difficulty than structure (Cooper 1984, Williams and Dallas 1984). Still, some others believe that structure causes more difficulty than vocabulary (Berman 1984). Kintsch and Vipond (1979) state that the factors that can affect the ease or difficulty of processing on the part of the reader are the number of idea units in a text, number of different arguments used, number of explicit connectives used, and the number of inferences. In another work, Kintsch (1979) suggests that the number of restatements (ie. the use of information contained in the long term memory), word frequency, number of inference, number of different arguments, idea unit density (ie. the number of words used in each idea), and the number of processing cycles (ie. finding, watching and storing the information in the memory) are the variables which should be included in a reading difficulty formula. Likewise, Marshall and Glock (1978-9) maintain that what affects comprehension is main idea statements. Others have found that content structure of the text influences comprehension.

In an attempt to suggest the ways to assess reading comprehension efficiently, Marr (1983) indicates that content structure, propositions, implicit/explicit connectives and the degree of prior knowledge are the variables which can facilitate or inhibit comprehension. She finally suggests that indices used in her study (readability formulae) "reflect only surface features of the text and do not reflect the meaning characteristics of the passage nor identify the variables integral or deriving from the text" (p. 120).

Readability formulae have been criticised for their inadequacy in measuring text difficulty. In the 1980s, there had been a tendency to include other factors like text structure, cohesion and coherence in the readability

formulae. For example, Huggins and Adams (1980) criticise these formulae in the following way:

> Although readability measures can be found that correlate fairly well with text difficulty... their main weakness is that the difficulty of a passage involves its comprehension, and surface structure descriptions capture only some of the syntactic variables necessary to comprehension. As an extreme example of the inadequacy of these formulas, most of them would yield the same readability index on a passage if the word order within each phrase, and the order of the phrases within each sentence, were scrambled. (p. 91)

As explained before, such most widely used readability formulae as those of Dale and Chall, and Flesch used McCall-Crabbs standard test lessons in reading as a criterion to make their formulae. Later, some of the researchers like Stevens (1980) questioned the validity of these lessons as a criterion, and therefore questioned many readability formulae using these lessons. Zakaluk and Samuels (1988) state that "The McCall-Crabbs passages, however, are inadequately normed and were never intended to be employed as criteria for readability formulas" (p. 124). They also state that such higher level text organisation like "cohesiveness and macrolevel organisation" are neglected in these formulae.

The problems with readability formulae and the need to revise and therefore improve them are also suggested by researchers like Chall (1980) and Harris and Jacobson (1979). Davison (1988) argues against the readability formulae in this way:

> An explanation of scientific idea may have to relate ideas in complex and often long sentences. Each of these factors would increase the readability level assigned by readability formulas, perhaps in a way that does not reflect the actual difficulty level of the text. That is, a formula may not be sensitive to real obstacles to comprehension in one text, while at the same time it predicts a high level of difficulty for

another text that is actually quite clear in most ways.
(p. 39)

According to Fry (1988) himself, there are some factors of sentence complexity that readability formulae have never been able to measure. Among these are the kernel distance theory. An unsplit and a split kernel have the same vocabulary and the same sentence length which gives the same readability scores, while research has indicated that split kernel sentences cause difficulty in comprehension.

As stated by Binkley (1988), readability formulae serve an important aim, they are intended to predict the approximate difficulty level of texts. They do but most of the complexities of the text are not accounted for in them. And adding other attributes to them does not improve their lack of reliability.

Similarly, Glazer (1974) argues that all elements of language are involved in reading comprehension in a way, while only a few are included in the formulae. She adds that any attempt at the inclusion of these variables has resulted in formulae which are too difficult to use in practice.

The other problem with readability formulae is that different results are obtained for the difficulty level of a certain text using different established readability formulae. For example, McConnell (1982) worked on nine college texts to determine their level of difficulty using three different readability formulae (Dale-Chall, modified Dale-Chall, and Fry's formulae). One of the texts had 11.1, 8.2 and 10.7 grade level using the three mentioned formulae.

Important factors other than sentence length and word length are neglected in most of the readability formulae. Wallace (1992) suggests that readability formulae are inadequate since they focus only on text as a product. According to her, although they are shorter in length, reduced clauses cause more difficulty in comprehension of the reader than longer

sentences which are easy to get. She actually suggests cloze be used as an approach for determining text difficulty, emphasising that cloze focuses on the process of the reader through the text. Similarly, Oller maintains that "One of the shortcomings of practically all of the formulas is that a pivotal element is sentence length, yet it has been shown that sentence length per se does not necessarily make content less recoverable" (1979, p. 349).

Similarly, DeBeaugrande (1984) suggests that what is not considered in readability formulae are "vividness, concreteness, exposition, organisation and content" which can be brought about by frequency and complexity of words and phrases (p. 162).

Although readability formulae were intended to only predict the difficulty of the text, some people have used them as a tool for simplifying the text, while this process usually increases the difficulty in processing due to the lack of explicit relationship between sentences. In this relation, Davison and Kantor (1982) argue that readability formulae do not adequately define comprehensibility of the text and they can be in fact misused in such a way as to decrease comprehensibility. Baxter (1992) adds to the point in this way:

> The shortcomings of readability formulas indicate that although text difficulty as determined by readability formulas appeared to influence student performance in some earlier studies, there are other powerful factors that may affect the performance of the readers. It clearly can not be assumed that these factors are based solely in the text, as is assumed in readability formulas. (p. 90)

On the whole, as Oller (1979) states, readability formulae have not been so successful as the formula developers hoped them to be, although they have been frequently used in research studies. Although reading researchers have been aware of the limitations of readability formulae for

deciding about the proper or correct grade levels, they are still used for determining the difficulty level of the texts (Gray and Leary 1935).

As Venezky (1984) concludes "Whatever faults these formulas have, they have become permanent fixtures in the instructional landscape" (p. 25). In this relation, Davison (1988) predicts that unless some applicable alternatives to readability formulae are found, they will continue to be used by researchers. She mentions some situations in which there is an attempt to use alternative procedures for determining the grade level of the texts. She suggests such text factors as "writing style (use of unusual words or complex sentence structures), the overall organisation of the book, and the kind of the exposition used" (p. 38).

As reviewed and suggested in all these studies, although readability formulae do measure some aspects of text difficulty, they do not adequately measure some aspects of the text which contribute to its difficulty. Due to the interactive relationship between the text and the reader, all variables involved in these two can cause difficulty and they can not be isolated in the complex process of reading. Linguistic analysis of a text (fully described in the next section and also chapter 3) can show aspects of a text that are easy/hard for readers to understand. This study is an attempt to show that the linguistic analysis of a text is a better way of determining the difficulty of a text. As an alternative way of looking at reading and those variables that contribute to its complexity, linguistic analysis of a text can be used as a tool for assessing its difficulty. A detailed explanation of different complexities of language according to systemic functional grammar is presented in the following section.

LANGUAGE COMPLEXITY AND READING DIFFICULTY

In most studies, the researchers use their own experience or at least a readability formula for determining the difficulty of the text. As explained in the previous section, most readability formulae focus on the variations of word length and sentence length (Fry 1977, Dale and Chall 1948). Some focus on criteria like vocabulary complexity, references to persons and sometimes syntactic and morphological complexity. Although they consider a few language elements, word, syllable and sentence count are not the only factors contributing to the difficulty of the text. In fact, what readability formulae focus on is general readability level of a text, while linguistic analysis of a text is a more complete view of difficulty (refer to the previous section for a detail on non-systemic criteria of difficulty, page 71). By using systemic functional grammar for the linguistic analysis of the text, it is assumed that a better measure of the complexity of the text is provided.

In systemic functional grammar, it has been suggested that the complexity of texts is related to the mode. Different modes vary in their complexities. In this study, mode and its relationship to complexity are considered in determining the level of the difficulty of the tests used. Mode "refers to the role language is playing in realising social action" and is concerned with texturing interpersonal and experiential aspect of meaning. Interpersonally, it deals with the semiotic space between the dialogue and monologue, while experientially, it "mediates the semiotic space between action and reflection" (Martin 1992, pp. 508-9). According to Martin (1986), the nature of the channel and the degree of the distance between the text and the activity it is describing is the concern of mode. The closer the text is to the activity it describes, the less abstract it is and vice versa. The level of this abstraction has to do with the complexity of the text. Spoken language is more concerned with the process, language in action, and

therefore it is less complex. Written mode of language is related to the product, ie. language in reflection which makes it more abstract and as a result more complex. In general, in systemic functional grammar, complexity of a text is related to its lexicogrammatical features the variations of which cause variation in complexity. Therefore, variation of mode, ie. congruency and incongruency in language causes differences in the complexity which is derived from such text aspects as lexical density, grammatical intricacy, complex nominal group structure and grammatical metaphor. It is believed that such an analysis helps us understand better the problems FL students have in their reading of these texts. A description of linguistic analysis of text is given in the following section.

Lexical Density

Lexical density is the proportion of lexical items as a ratio of the number of clauses in a text. Halliday defines it as "a measure of the density of information in any passage of text, according to how tightly the lexical items (content words) have been packed into the grammatical structure" (1989, p. 22).

Lexical items (content words) are those which operate in an open system and according to Halliday, "They are lexical because they function in lexical sets not grammatical systems" (1985a, p. 63). Lexical items are those representing the ideational content of the text such as things, happenings, participants, places, states, feelings, etc. Grammatical items (function words) act in close systems in the language, ie. they are the items which are part of a finite set of terms like determiners, pronouns, most prepositions, conjunctions, finite verbs and some adverbs. The function of grammatical items is to show tense, logical and circumstantial relations and to create context through cohesion rather than carrying the information

content of the text. So, these items establish the relationship between other lexical items.

Lexical density is calculated by counting the lexical items and dividing it by the number of ranking clauses (Halliday 1985a, pp. 65-67). In order to count the lexical density of each text, there is a need to distinguish between ranking clauses and rank shifted (embedded) clauses. Ranking clauses contain separate units of information and are related to each other through subordination and coordination within a clause complex. Embedded clauses are those which function at a lower rank (ie. phrase or word level), so they are not counted as ranking clauses.

According to Halliday (1985a), a high lexical density is the characteristic of written not spoken language. Since in the written language, the information is packed into fewer clauses than spoken language, it is more abstract and as a result more complex. Therefore, a text with a higher lexical density is more difficult to read. As shown in the examples below, congruent texts are of a low lexical density (lexical items are underlined).

Example: Text 1

14. Here they hibernate

15. Without feeding and hardly breathing at all

16. They sleep soundly right throughout the winter

                                    lexical items: 6

                                    clauses   :3

                                    lexical density:2

But in incongruent text, lexical density is high:

Example: Text 4

5. Some of this water vapour will finally condense in the form of clouds

6. and some of these clouds will eventually precipitate out some of their
        contents as rainfall or other types of precipitation.

lexical items :13

clauses   : 2

lexical density:6.5

Grammatical Intricacy

Lexical density is not the only measure of the complexity of the text and the second lexicogrammatical measure considered in the analysis of the texts is grammatical intricacy. A characteristic of spoken language which contributes to its intricacy, according to systemicists, is the use of long and intricate clause complex patterns in contrast with written language. It is supposed that any structure consisting of one clause alone without any relation with other clauses is less intricate and therefore easier to handle than those with more than one clause related together by dependency (Ravelli 1985, p. 33).

As highlighted by Halliday (1985a), written language is lexically dense while spoken language is grammatically intricate but lexically sparse. Halliday uses the term clause complex to refer to two or more clauses which are related to each other by interdependency or taxis, and the logicosemantic system.

There are two types of interdependency: hypotaxis and parataxis. Hypotaxis refers to the cases when two clauses of a clause complex are dependent on each other with one clause having an unequal status, ie. one modifier and the other modifying. But in the parataxis, the clauses are equal, one initiates and the other continues. The related concepts in traditional grammar are subordination and coordination. Hypotactic relations are shown by Greek letter notation(α, β,....) and in paratactic structures, numerical notations are used (1,2,3).

Logicosemantic relation consists of expansion and projection. In expansion, the primary clause is expanded by 1) elaboration (=) , 2) extension (+) or 3) enhancement (x). In projection, the primary clause projects the secondary clause by 1) locution (") or 2) idea ('). The related concepts in traditional grammar is "reported speech" (for more information and the definition of these terms, refer to Halliday 1985b, Chapter 7).

The intricacy of a clause complex is measured by Ravelli by two dimensions of Length and Depth. The length of a clause complex refers to the number of ranking clauses in it. The depth of a clause complex refers to the number of layers of ranking clauses. As she points out, structures containing one or a few clauses with only one layer are simpler than those with many clauses with several layers (1985). The principle for deciding when a clause complex becomes deeper in the analysis of texts is whether or not there is a shift from paratactic to hypotactic relations, for example:

13   α the droplets form

14   β 1   when the hot vapour hits the cold air

15   2   and changes back into water.

Here, the length of the clause is 3 and the depth is 2. So, the intricacy of this clause is 3+2=5. When we move from clause 14 to 15, there is a shift from hypotactic to paratactic. So, it gets deeper. But in the following example, there is no shift from hypotactic to paratactic. Therefore, the clauses are at one level depth and the intricacy is 3+1=4.

13   α the droplets form

14   β when the hot vapour hits the cold air

15   χ so that it changes back into water.

To measure the average grammatical intricacy of a text, the sum of length and depth of each clause complex in it is divided by the number of the clause complexes (Wignell 1992, personal communication, referred to in Chiramani 1992).

Nominal Group Structure

Another feature of the text which contributes to the packing (compactness) of information and therefore adds to its structural complexity is the structure of nominal groups. According to Halliday, the embedding structure of nominal groups which include a noun, pre-modifier and post-modifier which in turn consists of embedded clauses and phrases makes the packaging of information possible while carrying the main burden of lexical content of the discourse (1985c). Therefore, the nominal group contributes much to the complexity of written language.

As expressed by Halliday (1985b) any nominal group contains one or more of the functional elements of Deictic, Numerative, Epithet and Classifier with a principle element as Thing. According to him, Deictic (D) clarifies where an specific subset of the Thing is intended and is divided into specific and nonspecific deictics. Numerative (N) refers to the numerical feature of the Thing, cardinal or ordinal, either exact or inexact. Epithet (E) explains about some quality of the thing. Classifier (C) identifies a specific subclass of the Thing (T). And Qualifier (Q) is an embedded phrase or clause which usually follows the Thing. The order of presentation of these elements in a nominal group is usually D ^ N ^ E ^ C ^ T ^ Q.

In the case of this study, following McNaught (1986), only those nominal groups which contain a noun as modifier, which contain more than one pre-modifying elements and/or a post-modifying qualifier (prepositional phrase or embedded clause) are counted as complex structures. Therefore, four types of structures are counted as complex nominal groups based on their constructions:

Type 1. D ^ N ^ E ^ C ^ T   A noun with two or more modifying element (not counting the Deictic).

Example: the vertical air currents (D^E^ C^ T)

Type 2. D ^ N ^ E ^ C ^ T ^ Q [ ]   A noun with a prepositional phrase as qualifier.

Example: a cloud [of tiny droplets of water] (D^ T ^ Q)

Type 3. D ^ N ^ E ^ T ^ Q [ ]   A noun with an embedded clause as qualifier.

Example: water that was once in the saucepan on the cooker (T^ Q)

Type 4. D ^ N ^ E ^ C ^ N ^ T   A noun acting as the modifier of the thing.

Example: kitchen windows (C^ T)

Grammatical Metaphor

Grammatical metaphor is another feature which adds to the complexity of the text. As explained in the model of language on page 20, Ideational, interpersonal and textual meaning is expressed in the clause. In the ideational metafunction of the language, choices are made in the transitivity system of language, ie. among processes (material, mental, relational, etc.), the participants involved in the process and the circumstances associated with processes.

According to Halliday (1985b), "For any semantic configuration, there is at least one congruent realisation in the lexicogrammar. There may then be others that are in some respect transferred, or METAPHORICAL" (p. 321). The language user may select a typical realisation of process, participant and circumstance functions in the transitivity system of the language, ie. processes are chosen from verbal groups, participants from nominal groups, circumstances from prepositional phrases or adverbial groups, and qualities from adjectives. This is referred to as the congruent

realisation in the lexicogrammar. As expressed by systemicists, in an atypical realisation, a process may be realised as a thing, ie. the participants in the clause (for example, *applause* instead of *applaud*), circumstantial meaning as process or participant (for example, *followed* instead of *after*). This type of realisation is referred to as incongruence or grammatical metaphor. In this way, grammatical metaphor is a metaphorical lexicogrammatical form of a semantic configuration. According to Halliday (1985b), metaphor "is at least inherently complex" and the expressions which are highly metaphorical are more complex than those with less metaphorical wording (p. 329). For example, the following incongruent sentence is much more difficult than its non-metaphorical congruent form to understand:

Metaphorical: "He derived much satisfaction from this discovery"

Non-metaphorical: "Because of his discovery, he was very satisfied" (taken from Halliday 1985 a, p. 92).

Written language is more metaphorical than spoken language because metaphorical processes in the grammar are usually associated with abstraction and technicality. Abstract and metaphorical texts are more difficult to understand. According to Martin (1991), understanding metaphorical clauses requires reading them on several layers and interpreting their literal interrelationships, otherwise the meaning is not fully understood. The difficulty in understanding grammatical metaphor, as Halliday states, is that "we have to reconstruct our mental image of the world so that it becomes a world of things, rather than the world of happening... that we are accustomed to" (1989, p. 31). for a detail on how grammatical metaphor of a text is measured, refer to chapter 3, the section on the analysis of text for different complexities on page 110. The way these criteria are operationalised in the instruments will be discussed in the next chapter.

CHAPTER 3

THE STUDY

RATIONALE OF THE STUDY

The lack of research on the role of language proficiency and text difficulty together and the interaction between these two variables in a FL context prompted the researcher to conduct this study.

The first reason for this study was the problems my students have in reading English texts. More research is needed concerning the type and the extent of interaction between the text and readers at different levels of proficiency, especially in the context of Iran. Secondly, although some studies have been done to solve reading problems, most of them have been done in the second language context, not in EFL contexts. Research with EFL students has never addressed the same question, ie. the interaction between FL proficiency and linguistic difficulty simultaneously. Some studies have been conducted on the effect of text difficulty, but the subjects were native speaker children in the process of learning to read. Finally, as stated by Alderson and Urquhart, "The literature on reading abounds with speculations, opinions and claims, particularly in FL reading, but relatively little evidence is brought to bear on specific issues" (1984, p. xxvii).

In order to define more accurately the role of language competence and text difficulty, there is a great need for further research into the contribution of these two variables to FL reading performance. It is hoped that the results of this study will help the teaching of reading in Iran. The implications of this study may help teachers, instructors and curriculum designers in reading to gain more insight into the complex nature of FL reading and the theoretical issues behind it.

PURPOSE OF THE STUDY

The purpose of this study is to investigate the problem of reading in Iran. This research, based on the proposed models of proficiency and reading, is to investigate the role of linguistic proficiency of EFL students in the extent to which they rely on syntactic, semantic and register cues in the text. However, this question must be answered by considering the role of text difficulty as a significant factor in reading comprehension. Therefore, the aim is to determine the extent to which differences in the use of syntactic, semantic and register cues in the text can be attributed to differences in language proficiency, on the one hand, and to differences in the register complexity of the text, on the other hand, as well as to the interaction between language proficiency and register complexity.

HYPOTHESES AND RESEARCH QUESTIONS

Based on three views about reading process, ie. bottom-up, top-down and interactive approaches to reading process, some hypotheses have previously been suggested by Alderson (1984, p. 4):

1. FL proficiency has an effect or plays a significant role in reading ability in that language.

2. L1 reading ability has an effect on reading in the FL.

3. Low command of the target language produces a "short circuit" effect on the transfer of first language reading strategies to FL reading. Regarding the research questions of this study, modifications of these three hypotheses are possible:

1. Readers with different levels of proficiency use different reading strategies in FL reading.

2. An important part of text difficulty is register complexity.

3. There is a change in strategy for decoding as FL texts become more complex in terms of register.

4. There is a difference between high, intermediate and low FL proficiency readers in their ability to use (alter) reading strategies as FL texts become more complex in terms of register.

5. Low FL proficiency blocks the transfer of L1 reading skills to the reading of FL texts.

6. Register complexity negatively affects the ability of good L1 readers to transfer L1 reading to the reading of FL texts.

7. There is a four-way relationship between reader's FL proficiency, L1 reading skills, FL reading and text difficulty in terms of register complexity.

8. Traditional measures of difficulty, ie. readability formulae are not adequate measures of text difficulty.

Based on the hypotheses made, the research questions of this study will be:

1. Do high, intermediate and low proficiency readers make different proportions of syntactically and semantically acceptable and register-based appropriate responses in their cloze tests in the FL? This shows the effect of

language proficiency and also different reading strategies used by different proficiency groups.

2. Is register complexity an important part of text difficulty?

3. As FL texts become more complex in terms of register, do the proportions of syntactically and semantically acceptable and register-based appropriate responses change? This shows the effect of text difficulty and also the change in strategy as FL texts become more complex in terms of register.

4. Do high, intermediate and low proficiency readers differ with respect to the change in the proportions of syntactically and semantically acceptable and register based appropriate responses as FL texts become more complex in terms of register? This shows the differences in the subjects' ability to alter strategies as FL texts become more complex (interaction between FL proficiency and register complexity).

5. Does low FL proficiency block the transfer of L1 reading skills to the reading of FL texts?

6. Does register complexity affect the ability of good L1 readers to transfer L1 reading skills to the reading of FL texts?

7. Does the relationship between readers' FL proficiency, L1 reading skills, and text difficulty in terms of register complexity affect the FL performance in the reading of FL texts?.

8. Are traditional measures of difficulty, ie. readability formulae adequate measures of text difficulty?

SIGNIFICANCE OF THE STUDY

Many studies have been done in the area of SL reading but only a few of them have worked in FL contexts. Moreover, little has been done to analyse and separate the processes through which EFL readers go in their reading. As some researchers have noted, there are some shortcomings in

all these studies. The most important of these are gathering inadequate information, not working on the same individuals at different levels of proficiency, focusing on the product of reading, ie. general comprehension rather than the process of reading, giving no insight into how different readers have arrived to their interpretation, and being quantitative in nature, rather than qualitative (Alderson 1984). Although some other studies have attempted to follow what Alderson suggested in their research, they still do not include the factor of text difficulty in their study and only a few of them have designed a cross-linguistic, within subject approach.

This is empirical research into the nature of the threshold of language competence and its contribution to successful FL reading while considering text difficulty as a factor which affects this threshold. Such a study can help gain more insight into the relationship between a number of variables influencing FL reading in a FL context. In fact, this study is partly a response to Alderson's call: "What is needed at present is a series of studies which are directed to the problems of reading in a FL and its relation with language competence and first language reading ability...." (1984, p. 21). According to him, qualitative studies in the area of FL reading can give more accurate results than quantitative. What is implied from Alderson's statement is that qualitative research gives insight into individual differences and individual factors. So, this study is an attempt to analyse the data both quantitatively and qualitatively. Moreover, based on our model of reading, both process and product of reading are combined as significant factors in reading in FL context.

The findings of this study will hopefully have implications for teaching reading in a FL context and will reduce the difficulties in the way of our readers' interaction with the text. If it is FL proficiency that causes more problem for the subjects, then as Alderson (1984) hypothesised, poor FL reading of these subjects is due to inadequate knowledge of language.

Therefore, it would be helpful to focus on developing the readers' proficiency in English. Similarly, if register complexity is proved to have an effect, the reading instruction should be done in a way that it familiarises the readers into comprehending those features typical of incongruent language. If first language reading is more significantly related to FL reading, we may conclude that the problem is of a reading nature and the lack of good strategies in L1 reading, leading us to teaching reading strategies. If, on the other hand, the threshold hypothesis is held to be true, then those variables influencing the level of this threshold must be taken into consideration in order to allow the transfer of good strategies. In all, it is hoped that this study will help a better understanding of the factors which are important to address in FL reading pedagogy, as well as what our readers at different levels of proficiency need in order to be able to read effectively.

METHODOLOGY

The present section is an explanation of the methodology followed in the study. The issues such as research population, instrumentation, pilot study, data collection and scoring them will be discussed.

RESEARCH POPULATION

The subjects of this study were 130 EFL students enrolled in General English I courses in the English Department of Medical School of Shiraz University in Iran. They (73 males and 45 females) were all young adult first year students in the Faculty of Medicine, in the 1994 academic year. Based on the aim of this study, the subjects had to be at different levels of proficiency. They were chosen randomly from seven classes. Due to the incomplete data, only 118 subjects were used for the main study. Based on

the policy of the department, the subjects were categorised to enrol in Pre-university and General English I, based on their scores obtained on the university entrance exam. Those whose scores were between 60-100 were chosen to enrol in General English I and the lower scorers were put in Pre-university English. Based on my teaching experience, it was assumed that those students enrolled in Pre-university were not able to do the tests of this study. So, all the subjects were selected randomly from General I courses. The result of the proficiency test showed that these subjects were appropriately chosen, as they were of different levels of proficiency. High, intermediate and low proficiency subjects were those classified by the Cambridge First Certificate Test of English. Good and poor L1 readers were selected on the basis of their scores in Farsi cloze test (refer to the next section for more detail). All these subjects had studied English as a guidance and high school compulsory subject for 6 years before they entered the university. Before doing the main study, all the subjects were consulted and convinced by the researcher and their teachers concerning the need for cooperation and this kind of research to improve their educational situation with respect to learning English language reading.

INSTRUMENTATION

The instruments of this study were of four types: a proficiency test, four English cloze tests, one Farsi cloze test and an interview.

Proficiency Test

As expressed by the research questions of this study (page 93), one of the aims of this study is to determine the extent to which FL proficiency

of the subjects is responsible for the differences in the use of syntactic, semantic and register cues in the text. Therefore, we had to collect data on the subjects' FL proficiency. The test used to collect such data is a version of Cambridge First Certificate Test used to categorise 118 subjects into high, intermediate and low proficiency readers. This test is:

> the most widely taken of all the Cambridge EFL examinations. It is an upper-intermediate level examination requiring knowledge of all the language skills and is widely recognised in commerce, industry and educational institutions in Britain and overseas as a proof of language ability at the upper-intermediate level. (University of Cambridge Local Examination Syndicate, UCLES, 1994, p. 13)

The reliability of the two proficiency tests, TOEFL and FCE is reported by Bachman (1988). The reliability estimate for FCE is reported to be ".878", showing it to be a reliable test of proficiency (p. 55).

Before doing the study, it was decided to use Cambridge Proficiency test in order to determine the level of the proficiency of the subjects. A pilot study was done on 20 high level students to see whether it works. As I was convinced by my experience that they would have difficulty with it, the results showed that even these high level students were not able to do this test. All the scores were below 25% of the whole score. This justified the use of Cambridge First Certificate as a test that will challenge the high level subjects too.

The test used was version no.1 of Cambridge First Certificate published in 1991. It consisted of four papers:

Paper 1 was a "reading comprehension" test consisting of 25 multiple choice questions, and 4 reading comprehension passages containing 15 multiple choice questions.

Paper 2 was entitled "composition". It consisted of 5 topics, from which two were chosen by the subjects.

Paper 3, ie. the "use of English" contained 6 parts which test lexicon, register and other elements of language usage. Part 1 was a cloze test with 20 blanks. In part 2, a sentence was given as a guide followed by an incomplete sentence which must have been completed in such a way that it meant as the sentence printed before it. In the third part of the use of English, there were sentences with the gaps to be filled by the words which were all connected with restaurants. In part 4 of this section, 5 sentences were given and the examinees were asked to complete them with a suitable expression formed from the word "give". Part 5 was a dialogue between a bank manager and an applicant. The examinees were instructed to complete the numbered gaps. The last part of this section contained a contextualised speech by the principal of a high school and the comments heard as well as the suggestions made at a school committee meeting. Three sentences were given to be finished by what the examinees think the school should do with the money and what would not be a good idea.

Paper 4 was "listening comprehension" containing four parts in the form of tape-recording-plus-booklet test. Each passage was read twice and the listeners were to fill the blanks or choose from multiple choice items while they were listening to the tape.

Paper 5 comprising "the speaking test" (an interview) was omitted. The rationale behind omitting this part of the test was that reading and speaking are at the ends of a continuum and therefore not strongly related. In fact, reading is a combination of literacy skills and comprehension skill. By contrast, speaking is a combination of oracy and productive skills. This study investigates the relationship between language proficiency and reading, not oral language. So, speaking is not a central issue to this study but rather a peripheral one. Most people learn to read by instruction (unlike speaking) and my experience in teaching such EFL students told me that there are some students who can not speak but read well and vice versa. In the SL context, different strategies are used for acquiring speaking and

reading. Because of the impossibility of interviewing such a large population and since there is only a weak relation between these two, the speaking test was omitted.

The scales and scores suggested in the manual of the test were used for scoring different parts of the test. The written parts of the reading comprehension and also the compositions were scored by two individual raters. The interrater reliability was computed by Pearson correlation coefficient formula. It proved to be .94. The points of difference in scores were discussed and then decided upon.

These scores were used to categorise the population into high, intermediate and low proficiency students. The criteria for categorisation was the Sturg formula (C=R / K). Later, the analysis of the data in SPSS proved that the cut points had been decided accurately. This produced 34 high, 40 intermediate and 44 low proficiency students.

Cloze Tests

Two types of cloze tests were used in this study, English and Farsi. They were used to describe the subjects' reading ability in the use of contextual cues both in English and Farsi.

W.L. Taylor is known as the inventor of the cloze technique, using the word from the Gestalt concept of closure which describes human tendency to complete broken and incomplete patterns. It was first developed as a readability device (Taylor 1953 and Bormuth 1969). Some other researchers have suggested cloze test as a test of SL proficiency (Oller 1973, Osgood and Seboek 1965 referred to in Oller 1979, Oller and Hinofotis, 1980, Swain, et al 1976, Fotos 1991, Stubbs and Telemedia 1976, Stubbs and Tucker 1974).

A high correlation has been found between cloze test and different language tests and also tests of different language skills. Some believe that cloze is probably able to measure only lower order proficiency skills (Alderson 1979). Still, some others believe that cloze tests are sensitive to constraints across sentences (Chihara, et al 1977). Moreover, cloze has been claimed to be valid and reliable measure of reading comprehension ability (Oller 1975, Oller, et al 1972, Oller and Tullius 1973, Taylor 1956, Bormuth 1968, mentioned in Farr and Carey 1986, Farr and Carey 1986, Brown 1978). A strong correlation has been found between cloze scores and scores on multiple choice reading comprehension test (Ruddell 1965, Potter 1968, Anderson 1971, Swain, et al 1976). Some of these studies report a high reliability and criterion-related validity coefficients between cloze and standard reading comprehension test with a range of .25 to .95, showing the amount of shared variance between them. However, some questions regarding the nature of cloze task and the skills it measures are yet to be answered.

According to Hatch, the cloze procedure "(a) forces the reader to be active and constructive; (b) requires guesses based on both syntactic and semantic cues of language; (c) requires retention of content in order for the reader to continue guessing" (1979, p. 140). Likewise, Bachman (1990b) states that cloze procedures "do hold potential for measuring aspects of students' written grammatical competence, consisting of knowledge of vocabulary, morphology, syntax and phonology/graphology, and textual competence, knowledge of the cohesive and rhetorical properties of the text" (pp. 87-88). Similarly, Johnston argues that global meaning in reading and more specifically cloze is achieved by the reader's processing of linguistic strings (linguistic cues in the string) and partly by means of non-linguistic information that the reader brings to the process of reading. According to him, "Assessment of reading comprehension requires interpretation of an individual's performance on some task which is based on information from

a given text within a given context. This performance on the test will depend on characteristics of the text, nature of the task, and the context as well as the person's reading abilities and prior knowledge" (1983, p. 20). In sum, cloze testing is now a widely accepted instrument for testing reading and it has been accepted as a means for understanding reading strategies used by readers (Wallace 1986, Clarke 1979). Therefore, cloze is the main reading proficiency measure in this study. However, findings are checked by an interview concerning subjects' use of syntactic, semantic and register cues. Moreover, in the case of this study, since the interaction between the reader and the text is assessed, the preceding findings support cloze testing as a good instrument to measure this interaction. All the variables of reading and its assessment in our model of reading and proficiency are considered. Since the main focus is on the linguistic aspects of reading rather than reading comprehension, cloze tests seem the most appropriate instrument to use. Moreover, as Rankin and Thomas (1980) argue, "Cloze procedure, far from being merely a test of sensitivity to local constraints, may well be considered as a slow motion, simulation model for the reading process in general" (p. 54). It is supposed that the use of syntactic, semantic and register based constraints in a text, as the very fundamental processes in reading, characterise the reading ability of the readers. In fact, reading ability in this way is related to or for the purpose of this study is defined as the ability to use context, ie. what strategies are employed by the reader in his/her attempt to comprehend and get the meaning of a text.

Syntactic, semantic and register-based unacceptable responses to a cloze test can best be used as a tool for understanding the interaction between the reader and the text and the strategies the subjects use in response to the blanks. It is believed that the inferencing process required to complete the deleted items in a cloze test can be based on the use of linguistic, textual and extra-textual knowledge such as register. As

Goodman (1988) points out, what readers do is not random but the result of interactive use of limited but complex information sources.

It is assumed that in order to predict what language forms are used in a specific situation in a cloze test, the readers make use of their knowledge of syntax, semantics and register as well as genre. They predict the context of a passage from the language used. This correspondence between text and context is done in reading comprehension or more specifically in a cloze test just as in speaking and writing. In this way, doing a cloze can be considered as not only comprehension but also as production.

As expressed in the previous chapter, the model of language on which this study is based is the systemic functional model, which enables the researchers to see, describe and evaluate how SL readers comprehend and produce meaning in a cloze test, in other words, the reader's ability to utilise the contextual constraints of a text. Given the systemic relationships between context, register, semantics and grammar revealed by systemic functional linguistics, all need to be included in a comprehensive approach to assessment. With this in mind, the researcher has used syntactic and semantic acceptability as well as register appropriacy as the factors emphasised.

Selection of English Texts

This section is a detailed description of the procedures used to construct the cloze tests used to evaluate the readers' ability to use contextual cues in the text. This part was carried out in two stages: 1) the construction, pretesting and finalisation of the cloze tests and 2) administration of the tests in the main study.

Four English and one Farsi passages were prepared for the tests. English cloze texts were chosen from science books. Medical texts were avoided since medical students have schema of medicine which may

interfere with their comprehension of language. Two of them were chosen from children's science books as congruent texts and two from adults' science books as incongruent texts (see appendix VI). In order to control for any effect of content, the topic of each of the congruent texts matches with one in the incongruent texts. Actually, they are matched two by two. Based on the research questions, the tests are arranged in an order of difficulty, from the most congruent as the easiest to the most incongruent as the most difficult. The subject of the first congruent text is hibernation and adaptation in frogs. This text matches with the first incongruent text in content, the number of words and the number of blanks. The second congruent text is about steaming and freezing and matches with the second incongruent text in content, the number of words and the number of blanks. The first incongruent text is about hibernation and adaptation in other animals, consisting of approximately equal number of words as the first congruent one. And the last text is about the water cycle in the atmosphere which contains approximately the same number of words as the second congruent text. To control for the effect of length, all four texts are of approximately equal lengths, varying between 161-215 words. The following table shows the number of words and also the number of blanks in them after the construction:

Table 1. Characteristics of Tests 1-4

TEST 1	TEST 2	TEST 3	TEST4
"Frogs" congruent 1	"Steaming and Freezing" congruent 2	"Adaptation and Hibernation" incongruent 1	"Water Cycle" incongruent 2
No.of words: 215 No.of blanks:25	No.of words: 170 No.of blanks: 20	No.of words: 207 No.of blanks: 24	No.of words: 161 No.of blanks: 20

Since the effect of text difficulty is the other research question of this study, the texts in different levels of difficulty had to be chosen. In this way, how the subjects interact with congruent and incongruent texts with different levels of difficulty could be examined.

The term "authentic text" has been used from late 70s. Generally, it refers to a "text not specially produced for language learners" (Williams and Moran 1989, p. 219). While trying to preserve the authentic nature of the texts, some required modifications were done. This procedure enables us to control some variables that might cause variance but are not of interest to this study such as word frequency, which Finn (1977) suggests as a factor in text difficulty. In measures of readability of a text, it is estimated that "sentences are more readable if they contain words that are of high frequency in occurrence and that are shorter than longer" (Nation and Coady 1988, p. 97). Moreover, Halliday (1985a) states, "Frequency of lexical items adds to the lexical density" (p. 64) and lexical density is one of the characteristics of written language which adds to its complexity (for more information refer to the section about language complexity and reading difficulty in chapter 2). Therefore, there was an attempt to control for the frequency of vocabulary as something which affects reading but is not of our concern. It is supposed that congruent texts contain more high frequency vocabulary than incongruent ones, ie. as we move from common sense to abstraction, less frequent words are used. In order to control for this effect, some of the high frequency vocabulary of the two congruent texts were changed to low frequency by checking Johanson and Hofland's Frequency Analysis of English Vocabulary and grammar (1989). Then, the mean of the frequency of vocabulary of each text was computed. The following table shows the means of each text, the difference among which is nonsignificant:

Table 2. The Mean of the Frequency of Words in Tests 1-4

Texts	Means
1	123.9
2	122.1
3	125.2
4	116.4

ANALYSIS OF TEXTS FOR DIFFERENT COMPLEXITIES

The analysis of the texts for determining their level of difficulty was done within the framework of systemic functional grammar. As explained in the review of literature in detail, the systemic linguistic parameters that contribute to the complexity of text are lexical density, grammatical intricacy, complex nominal group structure and grammatical metaphor. The way these features are operationalised and counted in order to make and arrange four texts in a range of difficulty is explained in the following section.

Lexical Density

Using Halliday's formula discussed in chapter 2, the lexical density of the four texts was measured. The following considerations were necessary for the analysis of this part:

1. Since this study is concerned with difficulty, another significant factor which must be taken into consideration in the lexical density of the texts is the frequency of the lexical items in relation to each other. As Halliday states, "The relative frequency of grammatical items can be ignored, since all of them fall into the relatively frequent bracket. But the relative frequency of lexical items is an important factor in the contribution" (1985a,

p. 64). Highly frequent words do not add too much to the lexical density and vice versa. As explained before, in order to control for this effect, some of the high frequency words in the first and second tests (congruent ones) were changed to low frequency words, similar to the words in the incongruent ones. This is done to ensure that the differences in the frequency of words do not affect the extent to which the subjects interact with the difficulty of the text and that they just focus on the aspects of difficulty which are of interest to this study.

2. Since there is a continuum from lexis to grammar in language, there are some borderline items which belong neither to lexical nor grammatical items clearly. Example of these kinds of items are modal adverbs or prepositions like *quite, just, hardly, right, once,* etc. In order to be consistent, these cases were excluded from the count in all four texts.

3. The items consisting of more than one word while having a single meaning (like: *go to sleep*) were counted as only one lexical item.

4. Relational processes (*be, have*) were considered one lexical item only when they were used as a main verb not auxiliary verbs.

5. In appendix I , for lexical density, the lexical items are underlined and the total number of them are given at the right margin.

In the table below, the lexical density in all four texts is shown. The texts are arranged so that when we move from the easiest to the most difficult, the lexical density tends to become high:

Table 3. Lexical Density in 4 Texts

texts	lexical items	ranking clauses	lexical density
1	92	31	2.96
2	91	27	3.29
3	101	21	4.90
4	86	12	7.16

Grammatical Intricacy

To measure the grammatical intricacy of the texts, the formula suggested by Wignell, explained in chapter 2, was used. In appendix I, for grammatical intricacy, the tactic and logicosemantic relations are shown on the left margin, the length of the clause complex is measured by counting the number of clauses, and the depth is counted by the sum of the layers in each clause complex. The notational conventions used are:

α, β   hypotactic interdependency

1,2,3   paratactic interdependency

=   elaboration

+   extension

x   expansion

"   locution

'   idea

In the following table, the intricacy of all four texts is shown. As it is revealed, when we move from congruent to incongruent texts, the grammatical intricacy tends to become less:

Table 4. Grammatical Intricacy in 4 Texts

texts	clause complexes	sum of intricacy for each clause	grammatical intricacy
1	15	47	3.13
2	14	40	2.85
3	11	31	2.81
4	8	16	2

As Halliday (1985a) notes, grammatical intricacy and lexical density are complementary notions, ie. a high level of one comes with a low level of the other. This is shown in the above table in that the texts with the higher level of lexical density are at the lower level of grammatical intricacy and vice versa.

Complex Nominal Groups

The complexity of nominal groups in the texts were calculated by dividing the sum of the complex nominal group structures by the number of ranking clauses in the text. The following table shows the nominal group structures in all four texts. It is shown that when we move from the easiest to the most difficult, the number of complex nominal groups increases:

Table 5. Complex Nominal Groups in 4 Texts

texts	no. of nominal groups	no. of clauses	complexity of nominal groups
1	3	31	0.09
2	7	27	0.25
3	13	21	0.61
4	19	12	1.58

In appendix II, nominal group structures are shown by dotted lines. As shown in the above table, text 4 is the most complex text because of its high lexical density which shows the compactness of ideas and high number of complex nominal groups which contribute to the complexity of structure.

Grammatical Metaphor

Finally, grammatical metaphor was calculated in the four texts. Although there are different types of metaphor including interpersonal and ideational, this study focuses on ideational metaphor. The analysis of metaphor in this study is based on the categories of grammatical metaphor developed by Ravelli 1985 with a few modifications (See appendix III). In appendix II, the grammatical metaphors of each text are counted and shown on the right margin. Grammatical metaphor is obtained by the sum of the number of instances of grammatical metaphor in each clause divided by the number of complex clauses in the texts.

In the following table, the result of the analysis of metaphor in all four texts are given. As it is shown, the more difficult the text is, the more grammatical metaphor is used:

Table 6. Grammatical Metaphor in 4 Texts

Texts	Number of Metaphors	Ranking clauses	Grammatical Metaphor
1	1	15	0.13
2	5	14	0.35
3	24	11	2.09
4	19	8	2.37

The following table is a summary of the analysis of the four texts. The lexical density, complex nominal group structure and grammatical metaphor is increased as we move from congruent to incongruent texts, while the grammatical intricacy is reduced. In other words, there is a move

from the easiest to the most complex texts, or rather from spoken (congruent) to written language (incongruent):

Table 7. Different Complexities in 4 Texts

Different Complexities	Frogs Test 1	Steaming & Freezing Test 2	Adaptatio& Hibernation Test 3	Water Cycle Test 4
Lexical density	2.96	3.29	4.90	7.16
Grammatical intricacy	3.13	2.85	2.81	2
Complex nominal group structure	0.09	0.25	0.61	1.58
Grammatical metaphor	0.13	0.35	2.09	2.37

In this way, the difficulty level of each of the four English texts was computed and arranged in an order of difficulty. Thus, it is tentatively assumed that test 1 is the least complex text in terms of register and text 4 is the most complex one. As Halliday (1989) mentions and it is shown in the above table, high levels of grammatical metaphor correlates with high levels of lexical density since the latter is a by-product of the former. In other words, the lowest level of grammatical metaphor in test 1 comes with the lowest level of lexical density and the opposite is true with test 4.

SELECTION OF FARSI TEXT

In order to minimise the effects of reader's content schemata, the subject of Farsi text was determined to be around the same subject as

English texts, that is adaptation and hibernation in fish. It was chosen from a Farsi science book. To determine the difficulty level of the Farsi text, as suggested by some experts lecturing at Farsi Language and Literature Department of Shiraz University, three different Farsi cloze tests were prepared and piloted on 30 students enrolling in Farsi courses in their first year of the university. The population were of the same characteristics as the main population in the study. The cloze tests were made by deleting every 7th word from the passages. The tests were scored and checked with a Farsi language expert in Shiraz University. Then, one of the tests with an average level of difficulty was chosen for the main study. An item analysis was done on it and inappropriate items were changed. The items which did not discriminate well were deleted. A post-test was done to determine the reliability of the chosen test. Pearson correlation coefficient formula was used to determine the reliability. It proved to be .87. In this way, the test with an appropriate level of difficulty and reliability was used.

CONSTRUCTION OF CLOZE TESTS

A cloze test is typically made by deleting words from a passage. Although according to Oller (1979), "it matters little where the counting begins" (p. 365), one or two sentences were left intact at the beginning of each passage.

There are two types of deletion procedures in cloze: random and rational. In random or fixed ratio method, every nth (5th or 7th) word of the passage is deleted. In this technique, the subject's ability to interact with the text is obtained by the number of exact words replaced (in exact word scoring) or the number of syntactically and semantically appropriate responses produced (in contextually acceptable method). In rational deletion or variable ratio method of deleting, instead of every nth word,

specific points that the tester wishes to test such as articles, auxiliaries, content or function words or other syntactic forms are deleted.

Since the aim of this study is not assessing students' performance on specific grammatical forms, the random deletion method was used and every 7th word was deleted, making approximately the same number of blanks. Each blank was of a uniform length. In order not to have many blanks of prepositions and articles, the place of some of the blanks was moved to the right or to the left. So, it is not exactly fixed ratio, ie. the regularity has indeed been modified and manipulated. This was also done in the construction of Farsi text. All the blanks are in roughly equal intervals (more explained in the section about pilot study). The four English cloze tests are shown in appendix VI.

INTERVIEW

An interview was carried out after the administration and scoring of the tests in order to assess readers' comprehension strategies in doing the cloze tests. Because of the large number of samples, it was not possible to interview all of them. So, seven students were selected for interview from high and low proficiency groups and five from the intermediate group. These subjects were interviewed and then compared in their reading strategies. The questions used were from the reading interview developed by Burke (used in Marek and others 1984, see appendix IV). The questions are devised to reveal how students cope with difficult material, their personal strengths and weaknesses as reported by themselves, what being a good reader means to them and what reading strategies the subjects recommend to others (Marek and others 1984). The questions also produced information on the process the subjects went through in reading and the meaning derived from the material. When the situation required, the questions were modified and extended. Open ended questions were also

incorporated in the interview in order to test interactive reading, and to provide subjects with an opportunity to express how and why they understood the text in a specific way. This kind of information provided us with some insights on the kind of strategies they utilised in constructing the meaning. The interview was conducted in an informal setting without any interruptions. All the interviews were recorded (full details of the interviews are presented in the follow up study of this research, chapter 6).

PILOT STUDY

In order to further refine these instruments, a pilot study was performed. According to Brown (1983), a "cloze test should be pretested like any other language test so that the results can eventually provide clear interpretations" (p. 114). The modifications done after pretesting helped the selection of appropriate blanks and also preparation of a more reliable and valid instrument.

After the preparation of English cloze tests, they were pilot-tested with a group of 30 EFL students studying English in EAP centre of the University of New South Wales in Sydney. The aim of the pilot study was to ensure that the difficulty order by which the texts were arranged was appropriate and also to evaluate the degree to which each blank discriminated amongst the students. The tests were administered on two classes, given in a counter balanced order. The tests were scored and checked with an English native speaker to decide about the level of acceptability and appropriacy of the responses. The scales used are explained in the scoring section of this chapter. The results of the study were processed in the Faculty of Education in the University of Sydney, using SPSS to perform item analysis and to determine the reliability of the

four tests. For measuring the reliability, Cronbach α (alpha) formula in SPSS was used:

1- Sum of Item Variances

   Total Score Variance

The reliability obtained for each category of the scales are as follows:

Table 8. Mean, Standard Deviation and Reliability of 4 Tests

Categories	Test 1	Test 2	Test 3	Test 4
Syntactic acceptability	m=78.6 sd= 12.1 r=.68	m=52.2 sd=12.6 r=.72	m=67.9 sd=12.4 r=.66	m=48 sd=14.5 r=.81
Semantic acceptability	m=94 sd=20.3 r=.74	m=66 sd=20.7 r=.78	m=84 sd=19.8 r=.69	m=53 sd=22.4 r=.83
Register-based appropriacy	m=2.6 sd=1.09 r=.21	m=1.9 sd=1.2 r=.31	m=1.9 sd=1.2 r=.40	m=1.5 sd=1.2 r=.54

As shown in the table, the value of the coefficient which shows interval consistency or the extent to which component items measure the same attribute in each test is satisfactory. The low reliability of the register appropriacy is a result of the small number of the items chosen for the analysis of register appropriacy. The reason for selecting only five items for analysis is the extreme difficulty of constructing register test, leading to a low reliability of this aspect of the tests (further explained in the scoring

section of this chapter). An item analysis was done in order to increase the reliability. Although it was decided to use random deletion of every 7th word, those blanks which did not discriminate were changed to one word to the right or to the left and ineffective blanks were omitted. The four tests are presented in appendix VI.

As pointed out by Klare, et al (1972), the actual measure of the readability of a cloze test can be measured by the average scores of a group of subjects on that test. The percentage of the acceptable and appropriate responses of the subjects of the pilot study was a measure of the comprehensibility of the four texts. The results indicated that the difficulty level of the texts had been decided upon appropriately. The number of acceptable responses in the first test was more than the second one which itself contained a greater percentage of acceptable responses than the third one. And the last test (the most difficult one) contained the least acceptable responses.

The Farsi cloze test was also piloted in Iran. As explained before, after the selection of a test with an appropriate level of difficulty, a post-test was done and its reliability was determined. The reliability of the Farsi test was computed manually by finding the correlation between the subjects' scores on the pre-test and post-test of the Farsi cloze. After an item analysis, those items which seemed to be inappropriate were changed in order to increase the reliability.

DATA COLLECTION

All the tests described in the previous section were administered during two consecutive weeks. As suggested by local examination syndicate of Cambridge, the total testing time allocated to the whole proficiency test was 5 hours (1 hour for reading comprehension, 1.5 hour for composition, 2 hours for the use of English and half an hour for listening comprehension).

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Due to the length of the test and in order to control for the effect of fatigue, it was decided to split the test and administer it in two consecutive days. The reading comprehension and the use of English part of the test were administered in the first day, 19th of October 1994. Then, the listening comprehension and the composition were administered on 20th of October 1994. The Farsi translation of the instructions given for each part of the test was written above each part. Iranian students are mostly used to multiple choice format in English tests. In order to control for the effect of unfamiliarity with the test format, in particular listening comprehension, the examinees were instructed about how to do the different parts of the test in Farsi. All the subjects took the tests under a similar testing atmosphere. The listening comprehension passages were read twice on the tape which was controlled by a central system. Between each section of the test administered each day, the subjects were allowed to take a break.

Since there is more possibility of transferring L1 reading task to L2 reading task than vice versa, English cloze tests were administered before the Farsi test. Before the administration of cloze tests, the subjects were asked to read the whole passage first and then try to fill the blanks. They were encouraged to fill all the blanks. All the subjects were tested in two groups in two examination rooms and the instructions were given in Farsi. Since the subjects were mostly unfamiliar with cloze testing, a practice sentence was used to familiarise them with the technique and an explanation was given about how to do the cloze test before administrating them. The allowed time was given to the examinees and it was mentioned in the instructions that only one word is needed to fill the blanks. They were asked to try to guess in the case of difficulty. Three of the English cloze tests were administered in the first day, and the fourth and the Farsi cloze test were given to the subjects on the second day. To control for the effect of the order of testing, all the tests were given in a counterbalanced order. Those

students who missed one or two of the tests were required to take the tests during the same week.

The Farsi and English cloze scores were used to determine the subjects' level of L2 and L1 reading or rather their ability to use syntactic and semantic cues in English and Farsi cloze tests. Their scores on English and Farsi cloze tests were later compared.

SCORING OF THE TESTS

Cloze tests are usually scored by two methods: exact or acceptable. In the exact method, only those responses that are exactly like the original passage are counted. In acceptable method, all the responses which observe the syntactic and semantic constraints of the text are counted as well as the exact ones. The scoring procedure used in this study is the acceptable one. The acceptable method of scoring seems more appropriate to an EFL context on non-native speakers. As expressed by Oller, when scoring a non-native cloze test, there is something counter-intuitive about requiring the exact word (1973). After his experimental study with non-native speakers, Oller came to the conclusion that "the method allowing contextually acceptable response is significantly superior to exact word scoring technique" (1972), a conclusion which Swain, et al reached in 1976.

The scales on which the analysis of cloze responses was based were developed by Clarke and Burdell (1977) by using and adapting the Goodman's taxonomy (Goodman and Burke 1973). According to Goodman and Burke (1973), "A miscue is any point in the oral reading where expected response does not match observed response" (p. 25). Miscue analysis was later used by others in ESL to investigate its usefulness for assessing reading comprehension and also strategies of ESL students. It proved to be an efficient diagnostic tool in the case of ESL students (Connor 1981, Romatowski 1973, referred to in Connor 1981, Rigg 1977). Miscue analysis

was performed on the unacceptable responses to come to a conclusion about how the subjects have been able to interact with the texts syntactically and semantically. The unacceptable responses show the processes and strategies used by the subjects and enable us to describe the linguistic cues used, and characterise the degree of acceptability or the quality of the response to the cloze test.

The scales prepared by Goodman and Burke (1973) and adapted by Clarke and Burdell (1977) only contain syntactic and semantic acceptability for the evaluation of responses ranging from totally acceptable to totally unacceptable responses (see appendix V). What seems to be neglected in their taxonomies is the analysis of responses in terms of register appropriacy, making it an incomplete view of language. All the levels of language must be included in the analysis. Miscues do not occur only by factors related to the written language, decoded by the author. To be consistent with our theoretical model of proficiency, language does not operate at the level of words and sentences alone, but it operates at the level of text. Since there is a relationship between the language of the text and its register, they can not be viewed independently. So, in order to fully understand the factors which may contribute to reading difficulties for ESL readers, we should consider register variables as factors in the analysis of responses. This is an attempt to interpret the responses at every level of language, ie. in lexicogrammatical, semantic and situational terms. Although it is impossible to separate syntactic, semantic and register aspects of a response, due to the interrelationship between different parts of language, there are some responses that convey some meaning but they are not syntactically correct or are inappropriate in terms of register. In this way, the theoretical model of language is applied in our assessment of our subjects' interaction with the text, an approach which applies correlation between text and context.

Bearing our model of language in mind, the ability to operate in different registers is a part of language proficiency. Texts are dependent on the registers in which they are produced and there is, in fact, a relationship between register and the language of a text. In other words, field, tenor and mode of a situation determine how the language is used, thereby putting constraints on the type of possible text produced. It is assumed that the reader uses contextual clues in terms of register variables of field, tenor and mode to comprehend the text and to produce responses to the blanks in the case of a cloze. The reader brings with him the knowledge of the subject matter (what of a text), the relationship between the participants (who of a text) and the role the language has in a text (how of a text) in the process of comprehending a text. In this way, the reader's ability to cope and to pay attention to different registers is measured in all cloze tests. So, as Oller emphasises, the process of taking a cloze test is something more than "passive" reading, rather both "productive" or "active" as well as "receptive" or "passive" language skills are used. The process of formulating hypotheses, confirming or revisiting them is something like productive skills of speaking or writing (1973, p. 114).

Two scorers checked the responses to decide on the degree of acceptability and appropriacy of them. Then, all the responses with the scores of SYNAC 4 (completely syntactically acceptable) and SEMAC 6 (completely semantically acceptable) together with the exact responses made the acceptable scores. The rest of the responses (less than SYNAC 4 and SEMAC 6) were unacceptable ones.

In order to analyse the responses for register appropriacy, it was revealed after the pilot that some of the items were more sensitive to register because they discriminated more amongst the subjects. The following two examples are used to clarify the point:

1. Here, they hibernate: without feeding (and) hardly breathing at all,
   they sleep soundly right through the winter.

2. They are thin, so they feed a lot and they warm themselves in the (sun).

In the first example, most of the responses are syntactically and/or semantically wrong, like: *never, is, on, foods, very.* In this case, it is hard to decide whether the field, tenor or mode of the responses are right or not. In the second example, the subjects produced responses like: *winter, ground, water, spring, light, body.* Such responses provide more information about how the reader has comprehended the register of the test. Therefore, these blanks were selected in each of the four texts to be analysed for register appropriacy. These blanks are as follows:

Table 9. Blanks Analysed for Register Appropriacy

Tests	Blanks analysed
1	2, 7, 14, 16, 17
2	5, 8, 10, 13, 18
3	3, 4, 13, 14, 23
4	2, 3, 10, 18, 19

The responses to these selected items were scored to see how the subjects at different levels of proficiency interact with the context of the tests in terms of register variables of field, tenor and mode. The responses were scored in terms of exact responses and appropriate ones which together made the appropriate responses with a score of (1). Those which were wrong in register made the inappropriate register responses, scored (0).

A Pearson's product-moment correlation test was carried out between the subjects' scores in their reading comprehension test done during their course by their teachers and their scores on the cloze tests of this study (average of four tests) to determine if cloze test is measuring the same skill as reading comprehension tests. The correlation between the two was

significant, with r = 0.75. Then, Farsi cloze test was scored for syntactic and semantic acceptability, using the same scales used for scoring the English tests.

The Pearson product-moment correlation between the scores given by two scorers was used to compute the inter-judge reliability of each type of syntactic, semantic and register errors for each test. The reliability coefficients were all significant (p<.05), varying from .69 to .89.

DATA ANALYSIS

All the data were processed by statistics consultants first in Shiraz University in Iran and then in the Faculty of Education in the University of Sydney, using SPSS, a statistical package for social sciences.

CHAPTER 4

FINDINGS

The results from the data analysis is described in this chapter. These results are presented in the following sections:

1. FL proficiency and FL reading

2. Incongruence and complexity (difficulty)

3. Register complexity and FL reading

4. The interaction between FL proficiency and register complexity

5. Low FL proficiency and the threshold question

6. Register complexity and the threshold question

7. The relationship between FL reading, L1 reading, FL proficiency, and register complexity

8. Readability formulae and text difficulty

As explained in the previous chapter, 118 subjects of this study are categorised into three groups of high, intermediate and low proficiency subjects. First of all, a one-way ANOVA with proficiency category as the independent variable and the total scores of the English cloze tests as dependent variable was performed to see whether the cut-off points for the levels of the proficiency had been reasonable. In other words, there was an attempt to examine whether there is a relationship between proficiency scores and the total scores. The results show that the difference between

each level of proficiency in most of the tests are significant and each group is different from the other groups. The scatterplots show that the high group usually scores higher than the intermediate group. The intermediate group is located in the middle of the plot and the low group is scored the least of all. As we get over 90, the scores are always high.

To account for different numbers of blanks in each test, scores were converted to proportions. Then, the total proportions of acceptable responses in syntax (S) and semantics (M) and appropriate ones in register (R) in all four English cloze tests of all subjects were calculated. Therefore, the data for the analysis is the acceptable responses in syntax and semantics and appropriate ones in register. Then, comparison of these scores were made between groups and across difficulty levels to test the different hypotheses of the study. The number of subjects compared in each group are as follows: high = 34, intermediate = 40 and low = 44.

1. FL PROFICIENCY AND FL READING

Hypothesis: Readers with different levels of FL proficiency use different
                     reading strategies in FL reading.

To test if there is significant difference between high, intermediate and low groups, a one-way ANOVA is performed with proficiency as between group and the scores in syntax, semantics and register as within group factor on each of tests 1-4 in turn. For each type of error (S,M,R), separate analyses of variance are performed because there are large amounts of overlap among the error categories. Multiple range tests of significance are performed for each category in each test. As displayed in the following tables, the results in all three categories show significant differences:

Table 10. One-way ANOVA for Semantics (Test 1)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	1322.41	661.21	69.57	<.001
Within Groups	115	1092.95	9.50		
Total	117	2415.36			

Multiple Range Tests of Significance

Means	Groups	
10.05	Grp 3	
13.10	Grp 2	*
18.32	Grp 1	* *

The Multiple Range Tests using the Student-Newman-Kuels criterion show that all three groups differ significantly at the .05 level (for a detailed explanation, refer to the chapter of discussion).

Table 11. One-way ANOVA for Register (Test 1)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	38.94	19.47	20.29	<.001
Within Groups	115	110.38	.959		
Total	117	149.32			

Multiple Range Tests of Significance

Means	Groups	
2.18	Grp 3	
2.60	Grp 2	
3.59	Grp 1	* *

The results indicate that the difference between the high group and the other two groups is significant while the low and intermediate groups do not differ significantly from each other.

Table 12. One-way ANOVA for Syntax (Test1)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	989.19	494.59	49.77	<.001
Within Groups	115	1142.92	9.94		
Total	117	2132.11			

Multiple Range Tests of Significance

Means	Groups	
14.41	Grp 3	
16.95	Grp 2	*
21.56	Grp 1	* *

According to the table, all three groups differ significantly from each other.

Table 13. One-way ANOVA for Semantics (Test 2)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	694.29	347.15	60.26	<.001
Within Groups	115	662.46	5.76		
Total	117	1356.7			

Multiple Range Tests of Significance

3 2 1

Means	Groups	
7.9773	Grp 3	
9.9000	Grp 2	*
13.9412	Grp 1	* *

Significant differences between three groups are displayed in the table.

Table 14. One way ANOVA for Register (Test 2)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	42.1108	21.0554	18.5246	<.001
Within Groups	115	130.7112	1.1366		
Total	117	172.8220			

Multiple Range Tests of Significance

Means	Groups	
2.14	Grp 3	
2.75	Grp 2	*
3.62	Grp 1	* *

Unlike test 1, the three levels of proficiency are significantly different for register.

Table 15. One way ANOVA for Syntax (Test 2)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	587.95	293.97	43.07	<.001
Within Groups	115	784.87	6.82		
Total	117	1372.8			

Multiple Range Tests of Significance

Means	Groups	
11.2500	Grp 3	
13.0000	Grp 2	*
16.7353	Grp 1	* *

High, intermediate and low proficiency groups are different significantly for syntax, as in test 1.

Table 16. One way ANOVA for Semantics (Test3)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	993.78	496.89	78.61	<.001
Within Groups	115	726.86	6.32		
Total	117	1720.65			

Multiple Range Tests of Significance

Means	Groups	
4.79	Grp 3	
6.97	Grp 2	*
11.91	Grp 1	* *

The result shows a significant difference between the three proficiency groups.

Table 17. One way ANOVA for Register (Test3)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	51.46	25.73	22.40	<.001
Within Groups	115	132.11	1.15		
Total	117	183.57			

Multiple Range Tests of Significance

Means	Groups	
1.52	Grp 3	
1.90	Grp 2	
3.11	Grp 1	* *

The analyses in the tables reveal significant differences between high level and the others, while there is no significant difference between low and intermediate groups in register in this test.

Table 18.One way ANOVA for Syntax (Test3)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	1251.58	625.79	72.97	<.001
Within Groups	115	986.19	8.58		
Total	117	2237.77			

Multiple Range Tests of Significance

Means   Groups

10.38   Grp 3
13.37   Grp 2   *
18.44   Grp 1   * *

The results show significant differences in all groups.

Table 19. One way ANOVA for Semantics (Test 4)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	493.96	246.98	41.06	<.001
Within Groups	115	691.74	6.02		
Total	117	1185.69			

Multiple Range Tests of Significance

Means   Groups

4.11   Grp 3
5.57   Grp 2   *
9.11   Grp 1   * *

Significant differences between three groups for semantics are revealed from the analysis.

Table 20. One way ANOVA for Register (Test 4)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	19.12	9.56	11.11	<.001
Within Groups	115	98.95	.86		
Total	117	118.07			

Multiple Range Tests of Significance

Means	Groups	
1.02	Grp 3	
1.27	Grp 2	
2.00	Grp 1	* *

As indicated by the table, only the high group shows significant differences from the other groups for register.

Table 21. One way ANOVA for Syntax (Test 4)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	668.07	334.03	44.51	<.001
Within Groups	115	863.05	7.50		
Total	117	1531.12			

Multiple Range Tests of Significance

Means	Groups	
7.38	Grp 3	
9.50	Grp 2	*
13.26	Grp 1	* *

The three groups differ significantly from each other for syntax.

In general, the results of the ANOVA indicate the main effect of FL proficiency on the FL reading. The results of the ANOVA show the significant difference among the whole groups rather than the significant differences between each individual group. The results of the multiple range tests of significance, which is a further investigation into the differences between each group independently, indicate that the three proficiency groups differ significantly in all categories except Test1R, Test 3R and Test 4R (ie. register) in which only the high group differs from the other two significantly while there is no significant difference between the intermediate and low group.

To further investigate the relationship between FL proficiency and FL cloze tests scores, a correlation analysis was carried out for all tests. The correlations between the above two variables are displayed in the following table:

Table 22. Correlation between FL Proficiency and FL Reading in Tests 1-4 as Measured by Cloze Tests

Test 1	.7445	P<.001
Test 2	.7378	P<.001
Test 3	.7579	P<.001
Test 4	.7149	P<.001

The outcome of this analysis confirms the results of the Anovas, indicating that there is a significant correlation between FL proficiency and FL reading in terms of the ability to use contextual cues in all tests.

2. INCONGRUENCE AND COMPLEXITY (DIFFICULTY)

Hypothesis: An important part of text difficulty is register complexity.

To investigate this hypothesis, the total proportions of acceptable scores of i) the whole population and ii) the high, intermediate and low proficiency subjects are calculated and then the sum of their scores in tests 1+2 are compared with those of the tests 3+4. Below are the tables demonstrating the differences between tests 1+2 and 3+4:

Table 23. Acceptable Scores of All Subjects in Easy and Complex Tests

Tests 1 +2	Tests 3 + 4
Syntax = 69.4	Syntax = 54
Semantics = 54.1	Semantics = 32
Register = 56.2	Register = 36

Table 24. Acceptable Scores of High, Intermediate and Low Proficiency Subjects in Easy and Complex Tests

Tests 1 + 2	Tests 3 + 4
High	High
Syntax = 84.9	Syntax = 71.5
Semantics = 71.4	Semantics = 47.5
Register = 72	Register = 51.1
Intermediate	Intermediate
Syntax = 66.4	Syntax = 51.6
Semantics = 50.9	Semantics = 28.4
Register = 53.5	Register = 31.7
Low	Low
Syntax = 56.9	Syntax = 40
Semantics = 39.9	Semantics = 20.2
Register = 43.1	Register = 25.4

As we expected, the scores in all categories in easy tests (1+2) are higher than those in more difficult tests (3+4). No matter how proficient the subjects are in English, the register complexity in the tests 3 and 4 causes the subjects to produce less acceptable responses to the cloze tests.

3. REGISTER COMPLEXITY AND FL READING

Hypothesis: There is a change in strategy for decoding as the FL texts
          become more complex in terms of register.

The statistical technique employed to investigate whether the proportions of syntactically and semantically acceptable and register based appropriate responses change as the texts become more complex is a mixed model ANOVA. A multiple analysis of variance is done to find the effect of register complexity on FL reading. An SPSS MANOVA procedure is employed to perform tests of two way ANOVA with proficiency as the between subject factor and difficulty as the within subject factor. The following table gives the details of the analyses:

Table 25. ANOVA for the Effect of Text Complexity for Semantics

EFFECT .. DIFFICULT
Multivariate Tests of Significance (S = 1, M = 1/2, N = 55 1/2)

Test Name	Value	Exact F	Hypoth. DF	Error DF	Sig. of F
Pillais	.81373	164.551	3.00	113.00	<.001
Hotellings	4.3686	164.551	3.00	113.00	<.001
Wilks	.18627	164.551	3.00	113.00	<.001
Roys	.81373				

The results show that the proportions of semantically acceptable responses decrease significantly as a function of the increased register complexity.

Table 26. ANOVA for the Effect of Text Complexity for Syntax

EFFECT .. DIFFICULT
Multivariate Tests of Significance (S = 1, M = 1/2, N = 55 1/2)

Test Name	Value	Exact F	Hypoth. DF	Error DF	Sig. of F
Pillais	.71990	96.806	3.00	113.00	<.001
Hotellings	2.5700	96.806	3.00	113.00	<.001
Wilks	.28010	96.806	3.00	113.00	<.001
Roys	.71990				

Again, there is significant decreases in the proportions of syntactically acceptable responses as the register complexity increases.

Table 27. ANOVA for the Effect of Text Complexity for Register

EFFECT .. DIFFICULTY
Multivariate Tests of Significance (S = 1, M = 1/2, N = 55 1/2)

Test Name	Value	Exact F	Hypoth. DF	Error DF	Sig. of F
Pillais	.62162	61.879	3.00	113.00	<.001
Hotellings	1.6428	61.879	3.00	113.00	<.001
Wilks	.37838	61.879	3.00	113.00	<.001
Roys	.62162				

The effect of register complexity of the text appears significant on the proportions of register based appropriate responses.

In general, the analyses show that the effect of register complexity is significant in all categories, with the proportions of acceptable and appropriate responses decreasing as the text becomes more complex in terms of register. The analyses suggest that subjects with different levels of proficiency change their strategies as they move from the easiest test to the most complex ones.

4. THE INTERACTION BETWEEN FL PROFICIENCY AND REGISTER COMPLEXITY

Hypothesis: There is a difference between high, intermediate and low FL proficiency readers in their ability to change reading strategies as FL texts become more complex in terms of register.

To examine whether high, intermediate and low proficiency readers differ with respect to the proportions of acceptable and appropriate responses in each category as FL texts become more complex in register, the following procedures are used: mathematical comparisons of each group in their difference between the easiest and the most complex texts and a MANOVA explained in the previous section.

The difference between the proportions of acceptable and appropriate scores in test 1 (the easiest) and test 4 (the most complex) in all groups in different categories of syntax, semantics and register are shown in the following table:

Table 28. The Difference between Acceptable Scores in Test 1 and Test 4

Categories	High group	Intermediate group	Low group
Syntax	19.9	20.3	18
Semantics	27.7	24.6	19.6
Register	31.7	26.5	23.1

Table 29. The Difference between Acceptable Scores in Tests 1 -2, Tests 2 - 3, and Tests 3 -4 in Three Groups

S			M			R		
H	I	L	H	I	L	H	I	L
2.56	2.8	1.44	3.5	2.9	.3	-.6	-3	1.2
6.88	9.3	12.9	20	20.5	20	10	17	12.3
10.5	8.2	6.38	4.1	1.2	-.6	22.3	12.5	9.95

From the table, the difference between groups on tests 1 and 4 are not equal, ie. subjects with different levels of proficiency differ in their changes in acceptable and appropriate scores in different tests. Actually, the three groups of proficiency differ in a nonparallel fashion. This fact is well shown in the following graphs:

Graph 1. Comparison of Syntactically Acceptable Scores in Three Groups
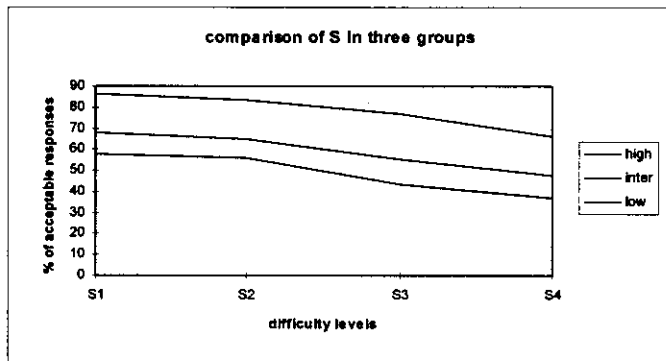
Graph 2. Comparison of Semantically Acceptable Scores in Three Groups
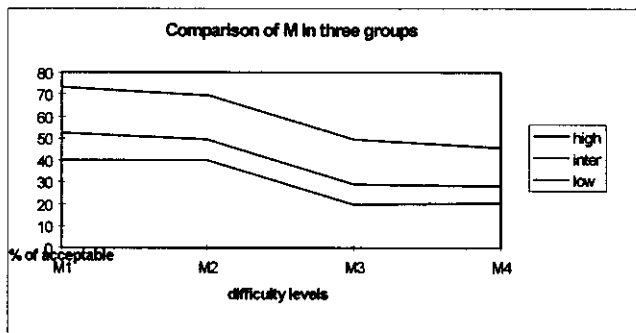
Graph 3. Comparison of Register-based Appropriate Scores in Three Groups
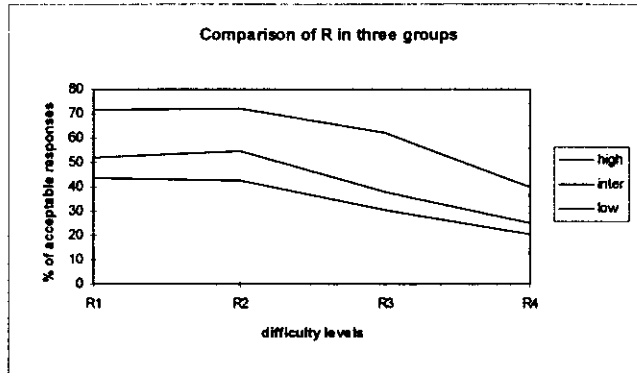
In the next step, in order to test for the existence of an interaction between FL proficiency and register complexity, multiple analysis of variance is employed. In order to further prove the results of the MANOVA, multivariate tests of significance are also done for each category. The results are presented in the tables below:

Table 30. MANOVA for the Interaction between FL Proficiency and Register Complexity for Semantics

Tests involving 'DIFFICUL' Within-Subject Effect.

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	3.23	345	.01		
DIFFICULTY	5.71	3	1.90	203.10	<.001
PROFICIENCY BY DIFFICULTY	.07	6	.01	1.21	>.05

EFFECT .. PROFICIENCY BY DIFFICULTY
Multivariate Tests of Significance (S = 2, M = 0, N = 55 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.05122	.998	6.00	228.00	>.05
Hotellings	.05372	1.002	6.00	224.00	>.05
Wilks	.94890	1.000	6.00	226.00	>.05
Roys	.04878				

Although the effect of text difficulty and proficiency are significant, there is no significant interaction between FL proficiency and text difficulty with regard to semantically acceptable scores.

Table 31. MANOVA for the Interaction between FL Proficiency and Register Complexity for Syntax

Tests involving 'DIFFICULTY' Within-Subject Effect.

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	3.23	345	.01		
DIFFICULTY	3.06	3	1.02	108.94	<.001
PROFICIENCY BY DIFFICULTY	.04	6	.01	.76	>.05

EFFECT .. PROFICIENCY BY DIFFICULTY
Multivariate Tests of Significance (S = 2, M = 0, N = 55 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.03955	.766	6.00	228.00	>.05
Hotellings	.04110	.767	6.00	224.00	>.05
Wilks	.96049	.766	6.00	226.00	>.05
Roys	.03857				

As indicated in the tables, there is no significant interaction between FL proficiency and text difficulty in the category of syntax.

Table 32. MANOVA for the Interaction between FL Proficiency and Register Complexity for Register

Tests involving 'DIFFICULTY' Within-Subject Effect.

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	304.50	345	.88		
DIFFICULTY	150.79	3	50.26	56.95	<.00
PROFICIENCY BY DIFFICULTY	5.28	6	.88	1.00	>.05

EFFECT .. PROFICIENCY BY DIFFICULTY
Multivariate Tests of Significance (S = 2, M = 0, N = 55 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.05875	1.150	6.00	228.00	>.05
Hotellings	.06149	1.147	6.00	224.00	>.05
Wilks	.94168	1.148	6.00	226.00	>.05
Roys	.05031				

The analysis shows, that although there is a main effect of difficulty and also FL proficiency in all categories, there is no significant interaction between FL proficiency and register complexity in the texts. This hypothesis of an interaction is therefore not supported by statistical analysis.

5. LOW FL PROFICIENCY AND THE THRESHOLD QUESTION

Hypothesis: Low FL proficiency blocks the transfer of L1 reading skills to the reading of FL texts.

Testing this hypothesis is done in two stages: I and II.

PART I

In the first stage, the responses to the cloze tests of two groups of good L1 and poor L1 readers who are of equivalent FL proficiency are

required. As mentioned in previous chapters, L1 reading ability of the subjects is determined by their acceptable scores in Farsi cloze test and their level of English proficiency is determined by their scores in English proficiency test. Likewise, their scores for FL reading are determined by the acceptable scores in syntax and semantics and appropriate scores in register in the four English cloze tests. Two groups of students having similar FL proficiency but different L1 reading levels were identified in the data. The relevant data for these students are shown in appendixes XI and XII. The two groups represent different reading abilities in Farsi. The good readers' mean is 52 with a range of 49-57 and the poor readers' mean is 42 with a range of 36-47. The means and two-point spread between the highest poor readers and the lowest good readers indicate different reading abilities in Farsi. A T-test for differences between the good and poor L1 readers reveals that there is a significant difference between the good and poor L1 readers (P<.05).

Moreover, the result of both groups' proficiency scores indicates that they are of equivalent proficiency in English. The mean of the proficiency of the good readers is 70.95 with a range of 61-81.25 while that of the poor readers is 67.70 with a range of 61-81. The result of a T-test for the difference between the means in the following table shows that there is no significant difference between the two groups (P>.05).

Table 33. T-test for the Proficiency of Poor and Good L1 Readers

	no. of cases	mean	SD	t-value	Sig of t
Poor L1 readers	21	67.70	8.07	- 1.47	.149
Good L1 readers	21	70.95	6.12		

The results indicate that good L1 readers are good L2 readers. The rank order of the two groups are maintained in English.

In order to find out if there is a correlation between the good and poor L1 readers' L1 and L2 reading, a correlation analysis is done on the data. The following table shows the results of the correlation test:

Table 34. Correlation Coefficients between L1 and FL Reading of Good and Poor L1 Readers

	L1Reading	L1 M	L1 S	FLReading	FL M	FL S
L1 Reading	1.0000	.9964**	.9965**	.3348*	.2914*	.3537*
L1 M		1.0000	.9859**	.3479*	.3016*	.3686**
L1 S			1.0000	.3194*	.2793	.3365*
FL Reading				1.0000	.9683**	.9814**
FL M					1.0000	.9025**
FL S						1.0000

In this table, L1 = Farsi, FL = English, M = semantics and S = syntax. English and Farsi cloze performances are weakly though significantly correlated. Different components of Farsi and English cloze tests, ie. S and M are also weakly correlated with each other. Although this correlation is weak, it exists (r = .33). Secondly, the acceptable means for both groups on the average of English cloze tests show a 6.2 percentage point difference.

A T-test for the difference between good and poor L1 readers' scores in English cloze tests (average of 1-4) is done to see if there is a significant difference between the two groups' means in their English cloze tests. This analysis is first done on the total acceptable scores and then on their total acceptable scores in semantics and syntax (M and S). The following tables show the results:

Table 35. T-test for Total English Cloze Scores (S+M)

Variables	Mean	SD
CAT 1 (Poor)	.4461	.096
CAT 2 (Good)	.5089	.088

| T-test for Equality of Means | | | | | 95% |
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-2.21	40	.033	.028	(-.120, -.005)
Unequal	-2.21	39.72	.033	.028	(-.120, -.005)

Table 36. T-test for Semantically Acceptable Scores in English (M)

Variables	Mean	SD
CAT 1 (Poor)	.3601	.085
CAT 2 (Good)	.4122	.081

| T-test for Equality of Means | | | | | 95% |
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-2.03	40	.049	.026	(-.104, .000)
Unequal	-2.03	39.92	.049	.026	(-.104, .000)

Table 37. T-test for Syntactically Acceptable Scores in English (S)

Variables	Mean	SD
CAT 1(Poor)	.5320	.110
CAT 2(Good)	.6056	.101

| T-test for Equality of Means | | | | | 95% |
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-2.26	40	.029	.033	(-.139, -.008)
Unequal	-2.26	39.67	.029	.033	(-.139, -.008)

As revealed in the results of the T-test, in their total English scores, the difference between the two groups is significant ($p<.05$). The T-test between the means of the syntactically acceptable responses of the two groups reveals that there is also a significant difference ($p<.05$). Likewise,

the T-test for the difference between the means of the semantically acceptable responses proved to be significant (p<.05).

In an attempt to complete this part of the investigation, the unacceptable responses (SYN less than 4 and SEM less than 6) are used as the data for analysis in order to show the reading strategies of each subject in each group. To do this, the unacceptable responses are analysed for syntactic and semantic acceptability and register appropriacy. The scoring procedures and the scales used are described in the previous chapter. Appendices XIII, XIV, XV, XVI and XVII show the percentages of each code categories. As displayed in these appendices, in all categories, good L1 readers perform better than poor L1 readers in terms of the quality of the responses in English cloze tests. In category 4 in syntax, good readers respond 60.5% compared to poor L1 readers 53.1% and in category 0, 23% for good readers and 31.2% for poor readers. The same is true of semantics and register.

In the last stage of this section, in order to compare each group's reliance on syntactic and semantic cues in both Farsi and English, the percentage of totally syntactically acceptable (SYN 4) and also semantically acceptable (SEM 6+5) are computed and compared together. The following table provides the results:

Table 38. Percentages of Totally Syntactically Acceptable Responses (SYN 4)

	FARSI	ENGLISH
Good L1 Readers	74.8	60.5 $\longrightarrow$
Poor L1 Readers	71.5	53.1

Table 39. Percentages of Semantically Acceptable Response (SEM 6+5)

	FARSI	ENGLISH
Good L1 Readers	78	45.2
Poor L1 Readers	65.2	39.7

As shown in the results of the analysis, there is some transfer of good skills, since good readers do better than poor readers in both languages, but their advantage in using semantics slips considerably in English. This may suggest the effect of inadequate English proficiency which causes the good readers to revert to lower level skills. In fact, low proficiency may "short-circuit" good reading habits to some degree.

PART II

This part is a further stage to investigate if low proficiency in the FL blocks the transfer of L1 reading skills to the reading of FL texts. To do this, 118 subjects of the study are divided into 64 low proficiency and 54 high proficiency subjects. Among each group the good L1 and the poor L1 readers are found. In the low group, this resulted in 33 poor and 31 good L1 readers and the high group gave 25 poor and 26 good L1 readers. Then, the percentages of acceptable responses in each category in each group are computed. The average of all the four tests are given in the following table:

Table 40. Percentage of Acceptable Scores in the High and Low Proficiency Groups

	Good L1 Readers	Poor L1 Readers
High FL Proficiency Readers	Sem .56 Syn .73	.48 .67
Low FL Proficiency Readers	Sem .34 Syn .51	.34 .44

The results show that the percentages of acceptable scores of good and poor L1 readers are different in the high proficiency group. But in the low

proficiency group, the percentage of acceptable scores of good and poor L1 readers are the same in the category of semantics. This indicates the possibility of a threshold effect. There is some indication that due to low proficiency, there is no difference between good and poor L1 readers' acceptable scores in semantics. In other words, the mother tongue reading strategies can not help due to inadequate knowledge of the second language, rendering support to the "short-circuit" proposition.

6. REGISTER COMPLEXITY AND THE THRESHOLD QUESTION

Hypothesis: Register complexity negatively affects the ability of good L1
readers to transfer L1 reading skills to the reading of FL texts.

In order to examine this hypothesis, the whole population is divided into two groups of 60 good L1 readers and 58 poor L1 readers and the percentages of acceptable responses in syntax and semantics are calculated in all four English tests. Then, the scores in SYN and SEM in easy tests (1+2) are compared with their scores in difficult tests (3+4). The results are presented in the table below:

Table 41. Percentage of Acceptable Responses in Easy Tests (1+2)

Good L1 Readers	Semantics = 59.84
	Syntax = 52.65
Poor L1 Readers	Semantics = 43.3
	Syntax = 61.72

Table 42. Percentage of Acceptable Responses in Difficult Tests (3+4)

Good L1 Readers	Semantics = 35.9
	Syntax = 58.9
Poor L1 Readers	Semantics = 43.30
	Syntax = 76.7

The effect of register complexity is shown in the results. In easy tests, good L1 readers have responded to semantics more than syntax while in difficult tests, their scores in semantics is less than syntax.

7. THE RELATIONSHIP BETWEEN FL READING, L1 READING, FL PROFICIENCY AND REGISTER COMPLEXITY

Hypothesis: There is a four-way relationship between readers' FL proficiency, L1 reading skill, FL reading, and text difficulty in terms of register complexity.

In an attempt to compare the predictors of FL reading as measured in cloze tests, step wise multiple regression analyses are employed. First, all acceptable and appropriate scores were changed to scores with equal importance since there are different number of items in all four tests (25,20,24,20) and different code scores for acceptable scores in three categories (M= 0-6, S=0-4, R=0-1). Then, the following regression equations are sought to firstly for the whole population and then for the high and low proficiency readers:

FL reading ← FL proficiency

FL reading ←L1 reading

FL reading ←FL proficiency + L1 reading

FL reading ←FL proficiency + text difficulty

FL reading ←L1 reading + text difficulty

For the two last equations, in order to identify the prediction of text difficulty or register complexity on FL reading, the regression analysis is performed on tests 1-4 consecutively. In this way, text difficulty is involved in the analysis. The dependent variable in all equations is FL reading and independent variables are FL proficiency and L1 reading.

The first step in the investigation is to check the weight each variable has on FL reading separately. When each variable is put in the regression analysis, different contributions of each independent variable emerges. The following table displays the amount of shared variance for each independent variable together with a test of significance of R2 following each analysis:

Table 43. Summary of Step-wise Regression Analysis

	Independent variables	R2	F	Sig of F
Test 1	L1R	.16	22.5	.000
	Prof	.55	144	.000
Test 2	L1R	.22	32.8	.000
	Prof	.54	138	.000
Test 3	L1R	.12	16.8	.000
	Prof	.57	156	.000
Test 4	L1R	.21	32.2	.000
	Prof	.51	121	.000

Although both independent variables contribute to FL reading significantly, language proficiency is a greater predictor of the FL reading than L1 reading in all tests since it has a greater predicted variance. The correlation analysis reported in table 22 proves this relationships between FL proficiency and FL reading.

To further demonstrate the relationship between FL reading and L1 reading, a correlation coefficient analysis is done on the data:

Table 44. Correlation Coefficients between Total L1 Reading and FL Reading Scores

	Test1(Eng.)	Farsi Test	Test2(Eng.)	Test3(Eng.)	Test4(Eng)
Test1(Eng.)	1.0000	.4032	.7290	.7312	.7222
Farsi Test		1.0000	.4700	.3560	.4664
Test2(Eng.)			1.0000	.7193	.6930
Test3(Eng.)				1.0000	.7034
Test4(Eng.)					1.0000

As shown in the analysis, there is a weak correlation between L1 reading and FL reading in tests 1-4.

Then, the contribution of each variable to FL reading is investigated when the two variables L1 reading and FL proficiency are put together in the analysis. To do so, L1 reading and FL proficiency are put in the same formula as independent variables and FL reading as the dependent variable. The analysis indicates the shared variance of both variables to FL reading. The F-test following each one indicates the significance of R^2:

Table 45. Total Proportion of Variance in FL Reading by FL Proficiency and L1 Reading

	R^2	F	Sig of F
Test 1	.55	73	.000
Test 2	.56	75.2	.000
Test 3	.57	77.6	.000
Test 4	.53	66.4	.000

As indicated in the tables, when we include both independent variables, the R square (squared multiple correlation coefficient) which is accounted for by the combination of these two variables is approximately equal to the R2 of proficiency alone. So, adding the extra variable does nothing. The results of the regression analysis are given in the table below:

Table 46. FL Reading as a Function of FL Proficiency and L1 Reading (Tests 1-4)

TEST 1
------------------ Variables in the Equation ------------------

Variable	B	SE B	Beta	T	Sig T
PROF	.150	.014	.707	10.17	.0000
L1RTOT	.173	.148	.080	1.16	.2473
(Constant)	4.12	2.440		1.69	.0935

(Test 2)
------------------ Variables in the Equation ------------------

Variable	B	SE B	Beta	T	Sig T
PROF	.154	.016	.660	9.58	.0000
L1RTOT	.396	.161	.168	2.45	.0157
(Constant)	-.384	2.64		-.145	.8849

(Test 3)

------------------ Variables in the Equation ------------------

Variable	B	SE B	Beta	T	Sig T
PROF	.181	.016	.751	11.0	.0000
L1RTOT	.033	.165	.013	.199	.8423
(Constant)	1.548	2.71		.570	.569

(Test 4)

----------------- Variables in the Equation -----------------

Variable	B	SE B	Beta	T	Sig T
PROF	.141	.015	.633	8.88	.0000
L1RTOT	.398	.160	.177	2.49	.0142
(Constant)	-3.806	2.62		-1.45	.1495

The analysis of each variable shows that in tests 2 and 4 both variables have significant contributions to FL reading while the contribution of FL proficiency is much greater and it almost does everything (Test 2 = proficiency, P<.001 and L1 reading, P<.05 and Test 4= proficiency, P<.001 and L1 reading, P<.05). In tests 1 and 3, the picture is different and only L2 proficiency significantly influences FL reading (Test 1= proficiency, P<.000 and L1 reading, P>.05 and Test 3= proficiency, P<.00 and L1 reading, P>.05). This indicates that proficiency is a more significant predictor of FL reading in all four tests while L1 reading contributes significantly but weakly in only tests 2 and 4.

In the second stage, in an attempt to provide more insight into the relationship between L1 reading and FL reading in readers with different levels of FL proficiency, separate multiple regression analyses are performed for high and low proficiency subjects. The whole population is divided into high and low proficiency subjects based on their scores in the proficiency test, ie. those who scored below the mean in the proficiency test (71) constituted the low group, and the subjects who scored above the mean were included in the high group (high= 55 and low=63). As in the analysis for the whole population, first the contribution of each variable to FL reading is determined separately. The amount of shared variance as well as an F-test of its significance in each test is given in the table below:

Table 47. Summary of Step-wise Regression Analysis for the High Proficiency Group

	Independent variables	R2	F	P
Test 1	Prof	.25	18.5	.000
	L1 R	.06	3.9	.05
Test 2	Prof	.30	23.2	.000
	L1 R	.15	9.8	.002
Test 3	Prof	.43	41.05	.000
	L1 R	.10	6.4	.014
Test 4	Prof	.43	40.2	.000
	L1 R	.23	15.9	.000

With the high proficiency group, L1 reading and FL proficiency influences FL reading in all tests, with proficiency having a larger effect on FL reading. For the low group, the contribution of each independent variable (L1 reading and FL proficiency) is investigated separately. The following table shows the results:

Table 48. Summary of Step-wise Regression Analysis for the Low Proficiency Group

	Independent Variable	R2	F	P
Test 1	Prof	.19	14.3	.000
	L1 R	.01	.79	.37
Test 2	Prof	.12	8.8	.004
	L1 R	.04	2.6	.10
Test 3	Prof	.10	7.3	.008
	L1 R	.000	.005	.94
Test 4	prof	.11	7.6	.007
	L1 R	.06	4.3	.04

It is shown that L1 reading influence on FL reading is nonsignificant in all tests except test 4, while proficiency is a significant predictor of FL reading in all tests.

To complete the investigation, both variables, L1 reading and FL proficiency are included in the model for both high and low proficiency subjects. The shared variance of both independent variables to FL reading is first computed and then an F-test is done on them to find the significance of R2. The following table shows the result of the analysis for the high group:

Table 49. Total Proportion of Variance of FL Proficiency and L1 Reading in FL Reading in High and Low Proficiency Groups
High Group

	R2	F	F
Test 1	.27	10	.000
Test 2	.37	15.5	.000
Test 3	.46	22.5	.000
Test 4	.53	30	.000

Low Group

	R2	F	P
Test 1	.19	7.17	.001
Test 2	.14	5.28	.007
Test 3	.07	3.67	.031
Test 4	.15	5.55	.006

As it is shown in the tables, for both groups, the R2 is significant, while less significant for low group than the high group. The tables below show the result of regression analyses when both variables are put together:

Table 50. FL Reading as a Function of L1 Reading and FL Proficiency in the High Group

TEST 1

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.90	5.69	-0.1	0.8745
Prof.	0.17	0.04	3.88	0.0002
L1 R	0.32	0.27	1.16	0.2495

TEST 2

	Coefficients	Standard Error	t Stat	P-value
Intercept	-3.4	4.71	-0.71	0.4611
Prof.	0.15	0.03	4.25	8.71E-05
L1 R	0.54	0.22	2.40	0.019

TEST 3

	Coefficients	Standard Error	t Stat	P-value
Intercept	-11.4	5.30	-2.1	0.0355
Prof.	0.24	0.04	5.87	3.01E-07
L1 R	0.42	0.25	1.63	0.108

TEST 4

	Coefficients	Standard Error	t Stat	P-value
Intercept	-21.1	5.09	-4.1	0.0001
Prof.	0.23	0.03	5.8	3.27E-07
L1 R	0.84	0.24	3.42	0.0011

Table 51. FL Reading as a Function of L1 Reading and FL Proficiency in the Low Group

TEST 1

	Coefficients	Standard Error	t Stat	P-value
Intercept	5.96	4.01	1.48	0.1426
Prof.	0.14	0.04	3.66	0.0005
L1 R	0.08	0.20	0.40	0.6854

TEST 2

	Coefficients	Standard Error	t Stat	P-value
Intercept	2.621388	4.530505	0.578608	0.565019
Prof.	0.126115	0.045759	2.756064	0.007737
L1 R	0.300728	0.23431	1.283458	0.204267

TEST 3

	Coefficients	Standard Error	t Stat	P-value
Intercept	6.73	4.58	1.46	0.1468
Prof.	0.12	0.04	2.70	0.0087
L1 R	-0.08	0.23	-0.3	0.7362

TEST 4

	Coefficients	Standard Error	t Stat	P-value
Intercept	-2.4	4.63	-0.53	0.593
Prof.	0.11	0.04	2.51	0.0146
L1 R	0.42	0.23	1.77	0.0805

For the high proficiency group, in tests 2 and 4, both variables (FL proficiency and L1 reading) are significant predictors of success or failure in FL reading, while in tests 1 and 3, only proficiency contributes significantly to FL reading. For the low group, the picture is somewhat different. While

FL proficiency significantly influences FL reading in all tests, L1 reading does not contribute to FL reading at all.

As shown in the analysis, some support is found for the relationship between L1 reading and FL reading which might appear in high proficiency readers as claimed by Carrell (1991) and Barnett (1989). So, the notion of threshold is supported here, since high proficiency subjects are able to take advantage of their L1 reading.

8. READABILITY FORMULAE AND TEXT DIFFICULTY

Hypothesis: Traditional measures of difficulty, ie readability formulae are not adequate measures of text difficulty.

To examine the hypothesis, Fry's readability formula is used as a traditional and the most popular measure of text difficulty in order to determine the readability level of all four tests. The result of the computation is as follows:

Table 52. Text Difficulty as Measured by Fry's Readability Formula

Tests	Sentence per 100 words	Syllable per 100 words	Readability level
1	4.8	137	8
2	7.9	145	7
3	4.5	136	8
4	4.5	168	13

As revealed by the table, the readability formula does not distinguish among tests 1, 2 and 3 but test 4 proves to be the most difficult. In order to examine if these levels of difficulty are reflected in the scores, the percentages of acceptable and appropriate responses of all 118 subjects in all three categories (S,M,R) are computed and then the results of test 1 (congruent) is compared with test 3 (incongruent) and also test 2 (congruent) is compared with test 4 (incongruent). The results of the analysis are presented in the tables below:

Table 53. Comparison of Scores in Tests 1 and 3

Test 1	S=	70.5
	M=	55.2
	R=	55.7

TOTAL= 60.4

Test 3	S=	58.5
	M=	32.8
	R=	43

TOTAL= 44.7

Table 54. Comparison of Scores in Tests 2 and 4

Test 2	S=	68.2
	M=	53
	R=	56.6

TOTAL= 59.2

Test 4	S=	50
	M=	31.2
	R=	28.6

TOTAL= 36.6

The data indicate that with readability formula, the first three tests are equal in difficulty and even test 2 is easier than test 1, but the use of systemic

functional grammar notion of congruency and incongruency, ie the variations of mode which are used to measure the difficulty level of the texts proves that the tests are distinctive in their levels of complexity (as proved by the subjects' scores). The percentage of acceptable scores in congruent language exceeds those in incongruent language. In fact, readability formulae are not able to discriminate for tests 1, 2 and 3. On the basis of this finding, there is the indication that readability formulae are not adequate descriptions of text difficulty.

CHAPTER 5

DISCUSSION

This chapter is a summary of the results after the analyses of the data as well as the discussions of these results. The following 8 sections present the discussion:

1. FL proficiency and FL reading
2. Incongruence and complexity (difficulty)
3. Register complexity and FL reading
4. The interaction between FL proficiency and register complexity
5. Low FL proficiency and the threshold question
6. Register complexity and the threshold question
7. The relationship between FL proficiency, L1 reading, FL reading and register complexity
8. Readability formulae and text difficulty

1. FL PROFICIENCY AND FL READING

The hypothesis is that readers with different levels of FL proficiency use different reading strategies in FL reading. In other words, the percentages (proportions) of acceptable syntactic and semantic, and appropriate register based responses differ in high, intermediate and low proficiency subjects. The results of all one way Anovas on the mean percentages of syntactically and semantically acceptable and register based

appropriate responses in tests 1-4 presented in tables 10-21 on pages 125-130 reveal that this hypothesis is accepted. When the effect of FL proficiency is considered without regard to the register complexity of the text, FL proficiency levels of the subjects significantly influence their ability to rely on different cues in the text. The scores indicate that the three groups made use of syntactic, semantic and register information in the cloze tests. There are, however, clear differences in the degree to which each group uses these contextual constraints in the texts. In fact, high proficiency readers made greater use of the cues in all texts.

Syntactic Acceptability in Responses

The Anovas done on the syntactically acceptable responses in tests 1-4 (tables 12, 15, 18, 21 on pages 126, 127, 129, 130) show that there are significant differences in the responses produced by high, intermediate and low proficiency subjects at the .05 level (test 1: $F = 49.7$, $P < .001$; test 2: $F = 43$, $P < .001$; test 3 : $F = 72.9$, $P < .001$ and test 4: $F = 44.5$, $P < .001$). The results of the Anovas indicate that the three groups in the analysis are significantly different but they do not show which individual group differs significantly from the other groups. In order to find the answer to this question, the data were examined using multiple range tests of significance. The outcomes presented following each Anova reveal that each group is significantly different from the other group in the proportions of acceptable syntactic responses in all tests.

In order to further demonstrate this significant difference, non-statistical analysis of the data is done. The high proficiency group is outperforming the intermediate and low group in using syntactic cues in the texts whenever they confront a difficult blank in the cloze tests (see appendix VII). In category 4 (the exact or completely syntactically

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acceptable), the high group produced an average of 78.2 % in all tests. There is also a much lower percentage in category 0 (totally unacceptable) by high proficiency subjects (an average of 9.4%). On the other hand, the percentages in category 4 for intermediate and low subjects are an average of 59% and 48.4% respectively. As indicated by the percentages of scores, intermediate and low groups are closer together than intermediate and high proficiency subjects and there is a larger gap between higher group and the other two groups. This supports the results of the multiple range tests of significance in acceptable syntactic responses. While being closer together than to the high group in category 0, a higher percentage of totally unacceptable responses are supplied by intermediate and low subjects (24.8% and 34.3% respectively). The interesting point is that in the average of all 4 tests, the high group's mean difference from intermediate is 19.2 %, while that between intermediate and low group is 10.6 %. The fact that high group is separated from the intermediate by a gap that is twice as large as that between intermediate and low groups reflects the degree of the high group's superiority over the other two groups. In fact, the higher group causes the large gap between the scores.

To compare how subjects with different levels of proficiency approach the text as a whole, the three groups' categories 2, 1, and 0 are compared. The high group's lower percentage in category 3 (acceptable in sentence) than the other two groups shows that the higher group does not violate discourse constraints as much as intermediate and low subjects (2.6 % in average), while intermediate and low subjects are concerned more with the sentence level constraints than discourse ones (4.1 % and 4.6 % respectively).

A close look at the table of scores in appendix VII reveals that within a sentence, intermediate and low proficiency subjects are more sensitive to the syntactic cues preceding the blank since they produce a higher

percentage of errors in category 1 (an average of 8.3 % and 9.3 % respectively) than the high proficiency subjects who produce less errors in this category (an average of 6.8). The comparison of three groups clearly indicates that the high group has a wider view of the sentence and does not only observe the preceding part of the sentence but considers the whole sentence more than intermediate and low subjects. They also have paid more attention to the global syntactic cues. On the other hand, subjects with a lower proficiency paid more attention to the individual sentences rather than discourse constraints of the text. Unfortunately their scores in category 2 (acceptable only with the following part of the sentence) is not consistent enough to support or deny the results in category 1. In all, the high proficiency students' superiority in syntactic skills is best shown in the following example:

In a cold climate, snakes can not move quickly enough to <u>catch</u> their prey

- a. make
- b. catch
- c. get
- d. having
- e. about

High proficiency subjects supplied response a, b and c which are all SYNAC 4, while responses d and e, being scored SYNAC 2, belong to low proficiency subjects (for an explanation of the codes, refer to appendix V). The example clearly demonstrates that those with a high proficiency have a better control of syntax of the sentence although a and c are not semantically acceptable. Admittedly, the low proficiency of the low group hinders them in realising that in the above example, a verb is required after *to*, hence, they use a preposition *about* or a gerund *having*.

Semantic Acceptability in Responses

The one way Anovas reported in tables 10, 13, 16 and 19 (pages 125, 126, 128, 129) indicate that there is a significant difference in the proportions of semantically acceptable responses produced by the three groups (test 1 : F = 69.5, P<.001; test 2 : F = 60.2, P<.001; test 3 : F = 78.6, P<.001 and test 4 : F = 41, P<.001). From the multiple range tests of significance following each Anova, it is found that every group in the comparison is significantly different from the other group (high from intermediate and intermediate from low). The outcomes appear to be very close to that of syntax. The mean score of the intermediate group is much closer to that of the low group (an average of 2 points difference). But there is a large gap between high and intermediate groups (an average of 4.5 points difference). This also reconfirms the results of the Anova done on the syntactically acceptable scores, denoting that high proficiency subjects also have a more control over the meaning of the texts than intermediate and low groups.

The nonstatistical data analysis presented in appendix VIII reaffirms the above mentioned finding. The high proficiency subjects produced an average of 59.5 % in the category SEMAC 6 (totally acceptable). The responses in this category produced by intermediate and low subjects are an average of 39.6 % and 30% respectively. Exactly as with the pattern for syntax, here again, there is 19.9% difference between the means of high and intermediate subjects as compared to that of 9.6% between intermediate and low groups. The subjects' scores in category 5 (semantically correct but not syntactically) reveal that the high proficiency subjects consider both grammar and meaning more than intermediate and low subjects (the average of 2.9 % in high as compared to 3.9 % and 4.3 % in intermediate and low groups respectively). The same case is true with category 3 (acceptable in the sentence if syntactic constraints are ignored). The high group produced

a lower percentage in this category (.31 %) than the intermediate and low groups (.72 % and .58 %). Considering only .35 % difference between intermediate and low groups in categories 4 and 5 and 14% difference in category 3, it may be suggested that those subjects with a higher proficiency are able to use an interaction between their top-down and bottom-up strategies, as mentioned in the previous section. But intermediate and low proficiency subjects consider only meaning irrespective of syntax of the sentence. It can be speculated that the language proficiency of the high group has reached a level to require the subjects employ an efficient interaction between their bottom-up and top-down strategies. However, this has to be confirmed in the responses in other categories.

Of interest is the average of each group's responses in category 0 (totally unacceptable). The higher group produces only 12.7 % as compared to intermediate and low groups' 22.9 % and 39.8 % respectively. This indicates the high subjects' more effective use of semantic cues in the texts. For the low group, the highest percentage of responses belong to category 0. This may denote these subjects' failure in getting the meaning of the text resulted from their insufficient mastery of the target language, leading us to the conclusion that ineffective or deficient decoding skills cause the lack of comprehension of the text.

The fact that different subjects with different levels of proficiency interact differently in terms of semantics with the text is illustrated in the following example taken from test 1:

They are thin, so they feed a lot, and they warm themselves in the sun.

a. a lot - sun

b. a lot - sunshine

c. a little - sunlight

d. fat - winter

e. much - water

f. little - earth

In this example, responses a and b are given by the high group and c, d, e and f are produced by intermediate and low proficiency groups. A large majority of the high proficiency subjects produced exactly the same words as the original ones. However, some of the low proficiency ones produced words like *much*, which is semantically acceptable but not syntactically. Although this sentence is taken from test 1 (the simplest one) in which there are a lot of semantic cues to help the readers guess the correct word, most of the intermediate and low subjects produced words which are completely irrelevant to the context of the text. The production of words like *fly* and *body* or *water* and *shade* respectively in the above blanks shows how weak these subjects are in their trial to guess the context of the text and produce at least partially meaningful words although some of them are syntactically correct. This reaffirms the findings in the syntactic part of this discussion, ie. the FL proficiency of these subjects is so low that they are not able to use reading strategies in an interactive way with other components of reading like their knowledge of syntax, semantics and register. This shows that low proficiency subjects are so confused that they are not even able to interact with the simplest tests (most congruent ones). This fact is also shown in the low proficiency subjects' percentage of meaningful errors (SYANC 5 and 6) which is only 34.3%, denoting their poor knowledge of FL.

What seems to be inconsistent with other findings in this analysis so far is that all 118 students, irrespective of their level of proficiency in the FL produced a higher percentage of totally syntactically acceptable (4) than totally semantically acceptable responses (6). The high proficiency students were expected to be able to use higher order processing in their reading more than the other two groups. Although their linguistic proficiency is superior to the low ones, just like the low proficiency group, they appear to be more sensitive to the syntactic aspect of the text than to semantic cues. It

seems that they have not been fully able to apply their good command of language to their reading behaviour. This leads to two possible explanations. It might have happened due to the effect of the way they have been instructed. As mentioned in the chapter of introduction, the emphasis is more put on teaching grammar in English courses. It might also be related to the construction of the tests, ie. the syntax part of the tests might have been easier than their semantics.

Register Appropriacy in Responses

From the one way Anova done on the percentages of appropriate responses in terms of register in all four tests (tables 11, 14, 17 and 20 on pages 125, 127, 128, 130), it is found that there is a significant difference between the three groups on all four tests (test 1; $F = 20.2$, $P<.001$; test 2: $F = 18.5$, $P<.001$; test 3: $F = 22.4$, $P<.001$ and test 4: $F = 11.1$, $P<.001$). The multiple range tests of significance for register appropriacy give a somewhat different picture from those found for syntactically and semantically acceptable responses. The analysis done on test 1 reveals that all individual groups in the analysis are not significantly different from each other. Considering the means (table 11, page 125), there is no significant difference between the intermediate and low groups ($I = 2.18$ and $L = 2.6$) but the high group with a mean of 3.58 significantly differs from the other two groups. The analysis of test 2 (table 14, page 127) shows that there is a significant difference between all these groups ($H = 3.61$, $I = 2.75$ and $L = 2.13$). The picture with tests 3 and 4 (tables 17 and 20) is similar to test 1, ie. there is only a significant difference between high group and the other two groups, but intermediate and low groups do not differ significantly. Indeed, there is not such difference between low and intermediate proficiency students in understanding register. In most of the tests, it is only the high group that gets the register.

The nonstatistical analysis using the proportions of each group's appropriate responses to register of the texts, as displayed in appendix X, shows that the high group's knowledge of register is much more than that of the intermediate and low group. Those with a high proficiency produce an average of 61.6 % of appropriate responses as compared to intermediate (42.6 %) and low ones (34.1%). It is clearly shown that the difference between the high and intermediate groups' percentages of appropriate responses (19 %) is 2.3 times more than the difference between the intermediate and low groups (8.5 %). This clearly conforms to the results of the multiple range tests of significance, suggesting the high group's superiority over the other two groups in producing register based appropriate responses. An example taken from test 2 illustrates how different the subjects approach the text in terms of register:

On really cold weather, you may find solid water on the <u>windows</u> in the
form of ice.

a.windows
b.window
c.ground
d.surface
e.road

In this example, responses a and b, scored as appropriate, are produced by high group and c, d and e are given by low proficiency subjects. The words *ground* and *surface* are scored 0 because they are wrong in terms of field while the last response, *road* is wrong in terms of mode. The register knowledge of these subjects is so low and also they are so baffled that they are not able to interact with the text and make use of the cohesive devices used by the writer (the use of the word *window* in the preceding sentence) which seems to be rich especially in this text, being simple in terms of register.

This may be claimed that high proficiency in the FL consists of register and that is what separates the high group from the intermediate and low groups. The knowledge of register even in the intermediate group is not high enough to separate it significantly from the low group which proved to have a limited knowledge of syntax and semantics. The high proficiency subjects in this study have been able to use their own abilities in syntax, semantics and register effectively in the interaction with the syntax, semantics and register of the text. In other words, they have been more able to use their own bottom-up and top-down strategies in their interaction with the text.

The findings of different parts of this section are summarised in appendix IX. The contingency tables of the acceptable scores in syntax, semantics and register (too many to be reported) also show clearly that the scores of those with high FL proficiency are higher than the other two groups in three categories. High scores in the three categories belong to those whose score in proficiency test is 90 and beyond. The scores of high proficiency subjects usually cluster around the higher end of the distribution, the intermediate ones in the middle and low proficiency subjects cluster towards the lower end of the distribution. The syntax scores of those who are scored above 60 in proficiency test are also high but these scores are more scattered than those having a higher proficiency in FL.

These results can add to the findings of other researchers following the same research question as the one explained in this section. For example, Cziko (1978) found a developmental order in the ability to use contextual constraints of the text by SL readers. He concluded that sensitivity to syntactic constraints of the text appeared before that to semantic and discourse constraints. The results of this study seem to render support and add to Cziko's conclusion. The scores indicate that all subjects' scores are higher in syntax than in semantics and register. With regard to

register, it is only those high proficiency students who are able to deal with the register of complex incongruent tests. As Cziko points out, it is not reasonable to expect that semantic constraints of a text be easily used if one is not at least sensitive to syntactic constraints as well. Adding to his contention, it seems reasonable that the use of register constraints in the text needs the ability to integrate the information available in the whole text and to relate the different variables of field, tenor and mode together. This is not to be expected from the reader with a low level of proficiency who has still problems in decoding the printed text. It was also observed in the pilot study that the subjects' proportion of acceptable responses in syntax and semantics were higher than in register. This may indicate that they have mastered syntax and semantics but not register of the incongruent texts. Moreover, there appears to be more differentiation in register in test 4. This happens because register is a deployment or readjustment of grammatical skills. It actually twists grammar. The subjects did better in syntax and semantics in incongruent tests than in register. There is the possibility that the register characteristics of incongruent language is not learned until syntax and semantics are mastered. This may be why people understand basic syntax and semantics and communicate with it but they cannot do it appropriately. Long term studies and testing are required to be able to answer such questions.

To further complete the investigation about the correlation between FL proficiency and FL reading as measured by cloze tests, a correlation analysis was employed. The results of this analysis, presented in table 22 page 131, indicate a high correlation between language proficiency and FL reading in all 4 tests (test 1: $r = .74$, test 2: $r = .73$, test 3: $r = .75$ and test 4: $r = .71$). So, here, proficiency is significantly correlated with the level of EFL subjects' ability to use syntactic, semantic and register cues in reading. The finding of the significant role of FL proficiency in FL reading has been well accepted in the literature (refer to the literature review of this study).

As an example, a moderate correlation is found between FL knowledge and the ability of Thai subjects learning English as an FL in Chiramani's (1992) study. She concluded that "FL competence is significantly related to their reading proficiency and it contributes significantly to the success or failure in reading. It forms an integral part of whatever is required for the full comprehension of text" (p. 206).

A positive correlation between language proficiency and reading is not new but including register complexity and investigating its relationship with other variables will certainly add to the preestablished views about the issue. To sum up the main points from this discussion, it can be said that although there is a significant correlation between FL proficiency and FL reading, the model of reading presented in this study clearly indicates that not only language proficiency but also other factors are involved in the process of reading. Reading is a process involving a range of variables contributing to its success and failure. As shown in the model, there must be an interaction between the variables of reader and text. There is an interaction between the language proficiency of the reader and the language of the text, being responsible for the complexity of the text, together with sociocultural information and assumptions inherent in the text, to which the sociocultural and real world knowledge of the reader interacts. The effect of the complexity of text will be discussed in section 3 of this discussion (page 178).

On the part of the reader, on the other hand, an interaction between linguistic knowledge (bottom-up) and sociocultural and real world knowledge (top-down) strategies is required for efficient reading in FL. The observation of scores, the strategies used by high level subjects and their self reports in their interviews support the model of reading developed in this study. They are actually able to use their decoding skills as well as top-down skills in an interactive way. They appear to make use of the

available cues, their background knowledge of the subject and their knowledge of the register of the text to predict the meaning which fits the incoming blanks. Perhaps, they fit the definition given by McLeod and McLaughlin (1986) stating that advanced readers have automatised their decoding skills and actually have passed beyond mechanics of language. It is here that we have to disagree with Goodman's views about reading. Top-down theorists like him overemphasise higher level skills as a prerequisite to efficient reading comprehension. Therefore, Eskey's (1988) criticism of top-down theories applies here. As she points out, high language competence is one of the causes and not only a result of efficient reading. Good decoding skills as well as efficient use of higher level skills are both necessary for accurate and effective reading. To be consistent with the models of reading and proficiency proposed in this study, the interaction between FL proficiency and different components of language in the text is accepted. The EFL readers have to reach a certain level of FL proficiency in order to be able to interact efficiently with the text and this proficiency does not only consist of the mastery of syntax and semantics but that of many other variables including register. This claim is further proved in the next parts of this discussion and also in the results of the follow up study of this research.

The finding that high proficiency subjects are more able to use context than low proficiency subjects has been born out in a number of studies (Chihara, et al 1977, Cziko 1978, 1980, Cooper 1984, Devine 1987, Clarke 1980 and Hudson 1982; refer to the literature review chapter for more information). The findings of this study confirm and extend the work of these researchers and emphasise the need to develop language skills of the readers in order to help them rely more on the higher level processes in reading, rather than relying on bottom-up decoding skills.

Moreover, the findings of this study add more insights into the nature of SL/FL reading as put forward by reading experts like Devine (1987):

1. Increasing language competence positively correlates with increase in syntactic and semantic acceptability of oral miscues.

2. Increasing language competence correlates negatively with high frequencies of no or low syntactic and semantic acceptability (p. 83).

It can be added to his conclusion that:

3. There is a positive correlation between increasing language proficiency and the use of register constraints in the text. As general language proficiency of the FL readers increases, their sensitivity to register cues available in the text increases.

The point that merits observation is that as Devine (1987) also found, as proficiency increases, sensitivity to higher order semantics as a more efficient reading skill increases but it is not the case that sensitivity to syntax disappears in high proficiency subjects. It is found that high proficiency students reveal better performance than lower proficiency ones in all categories of syntax, semantics and register. So, the strategies they use in reconstructing the meaning of the text is a combination of all these skills. Just like Devine's subjects, the readers continue to pay attention to all cues, ie. the use of syntactic cues and at the level of meaning and register of the text. This supports our model of reading and proficiency. Successful reading in a FL necessitates an interactive process (not only top-down) in which readers make use of all levels of language, from phonology, lexicogrammar to the use of context, both of situation and of culture.

2. INCONGRUENCE AND COMPLEXITY (DIFFICULTY)

The hypothesis which is postulated in this section is that register complexity is an important part of text difficulty. In order to investigate this hypothesis, three non statistical analyses using the raw scores are carried out. As explained in chapter 3, the section about the analysis of the 4 texts for different complexities, texts 1 and 2 were proved to be congruent, ie. they were less complex than texts 3 and 4 in terms of register criteria (lexical density, grammatical intricacy, complex nominal groups and grammatical metaphor). In fact, texts 3 and 4 were incongruent, with text 4 being the most complex one. In order to see whether this order of complexity is reflected in the scores, the proportions of syntactically and semantically acceptable and register based appropriate responses of the whole population were calculated once in texts 1 and 2 (simple and/or congruent) and once in tests 3 and 4 (complex and/or incongruent).

The results of the analysis for the whole population are reported in table 23 on page 132. As it was expected, in all categories of syntax, semantics and register, the scores in tests 1 + 2 exceed those in tests 3 + 4 (SYN =69.4, SEM = 54.1 and REG = 56.2 in tests 1 + 2 as compared to SYN = 54, SEM = 32 and REG = 36 in tests 3 + 4). It is clearly shown that the difference between syntax scores in congruent tests and that in incongruent tests is only 15.4. But this difference is larger in semantics and register scores (for semantics = 22.1 and for register = 20.2). This indicates that although tests 1 + 2 are more spoken and therefore more grammatically intricate, this is not the syntactic complexity which has caused problem for the subjects. Instead, the problem with incongruent tests which are more toward written form and not as grammatically intricate as the congruent ones is more with semantics and register. We may conclude that it is the register complexity which causes difficulty in interacting with the texts for the whole population.

In the second stage, the proportion of acceptable scores in tests 1+2 and 3+4 was calculated for each proficiency groups, high, intermediate and low separately (table 24, page 132). The proportions of scores in all categories in easy tests (1+2) are higher than those in more difficult tests (3+4). The same pattern is repeated here. The register complexity of tests 3 and 4 has caused the subjects to produce less acceptable responses, no matter how proficient they are in the FL. Again, the difference between the scores in congruent and incongruent tests is less in syntax than in semantics and register. This indicates that syntactic complexity in congruent tests is not as much problem as semantics and register even for intermediate and low subjects.

Interestingly, the differences of syntax, semantics and register scores between tests 1+2 and 3+4 by intermediate and high subjects are larger than those by the low group. Actually, for the low group, the scores in tests 1 and 2 in the three categories are closer to those in tests 3+4. The differences are 16.8% in syntax, 19.7% in semantics and 17.7% in register, indicating that their proficiency in the FL is so low that the congruent and incongruent tests do not make as much difference for them as for the higher proficiency subjects. They have as much difficulty with syntax as with semantics and register. This confirms the finding of the previous analysis for the effect of proficiency which states that when decoding skills are deficient, the higher order processing is also limited.

To complete the investigation of the effect of register complexity on the difficulty of the text, an analysis of the proportions of acceptable scores of each individual in tests 1+2 and 3+4 was carried out. This was done in order to answer the question of whether all individual subjects produce more acceptable responses in congruent tests than in incongruent ones, and if there is any subject whose scores are higher in incongruent tests than in congruent ones. In other words, there was an attempt to investigate the

possibility of the existence of an order of difficulty in learning congruent and incongruent language. The outcome of this analysis indicates that all of the subjects scored higher in test 1+2 than 3+4, except three subjects (id no. 3, 10, and 28). Student no.10 is scored equally in both types of tests (52 % in both). For subject no. 28, the scores are so close together (35.5% in tests 1+2 and 36% in tests 3+4) that they can be taken as equal too. But in subject no.3, this difference is 11 points (31 % in tests 1+2 and 42 % in tests 3+4). The scores of these three students in proficiency test show that no 3 and 28 are among low proficiency subjects and no. 10 is one of those in the low intermediate level. The larger difference is found in subject no. 3 who is low in language proficiency. How can a low proficiency subject respond better to a more complex test? Considering the other findings so far, we can not but conclude that this has happened by chance.

The findings of this part as well as the next section provide more evidence that different modes of language, spoken or written, are one of the causes of difficulty inherent in the language, as systemic functional grammarians believe. Indeed, as pointed out by Halliday (1989), in oral or spoken language, there are many more clues for the listeners or readers to help them get the meaning. The topic is more congruent in this form of language. In contrast, in incongruent language which is in a written mode, there is no shared space between writer and reader. The text is impersonal and unlike spoken form, there is little extra-linguistic support. He summarises this difference in this way:

> In informal spoken language, the lexical density tends to be low: about two lexical words per clause is quite typical. When the language is more planned and more formal, the lexical density is higher; and since writing is usually more planned than speech, written language tends to be somewhat denser than spoken language,....[and that's why] the passage becomes difficult to read. (Halliday 1989, pp. 22-3)

To him, the other cause of difficulty in reading is that "almost all the lexical items in any clause occur inside just one or two nominal groups (noun phrases)..." (p. 23). Moreover, as he states, "the main cause of ambiguity is that clauses are turned into nouns". And therefore, a lot of "semantic information is lost when clausal expressions are replaced by nominal ones" (p. 25). Grammatical metaphor is also mentioned as a source of ambiguity which causes difficulty in understanding. According to Halliday (1989), lexical density and complex nominal groups are the result of grammatical metaphor. So, it is high lexical density, low grammatical intricacy, high grammatical metaphor and high use of complex nominal groups which characterise a text as being more complex (for more information, refer to the chapter of the review of literature).

It has been claimed in L1 that children first learn congruent and spoken forms of language in its context and then as they grow, they learn the incongruent and written forms. As Halliday (1989) points out, "Children learn first to talk in clauses. It is only later- and only when they can already read and write with facility- that they are able to replace these clauses with nominal groups" (p. 27). Biber (1988) also states that children first learn spoken and then written language. It is pointed out that when the children go to school, they are in the beginning of the process of becoming literate and they already know a lot about oral language. As Christie (1989) states, beginning to control the written mode is very difficult for them, "they must master the characteristics of the written mode, where this involves learning the registers and genres of the various fields of school learning...." (p. 54). Gradually, they are provided with the means to understand the written mode. In the case of SL/FL situations, no study has been done to indicate this. But it can possibly be applied to SL/FL readers. It may be assumed that they first learn the characteristics of spoken or congruent form and then the written form.

It is evidenced in this study that tests 3 and 4 which are more lexically dense and contain more complex nominal groups and grammatical metaphor appear to be more difficult for the subjects. Based on their scores, the difficulty with incongruent texts proved to be true for the subjects. This may happen because the subjects are familiar with the form of the language which is taught in basic and intermediate English courses. When they move to scientific English, which is an incongruent style and therefore much different from that they have learned before, it is difficult for them to interact with such texts. Eskey describes this shift from spoken to written form to be "learning a new dialect" (1971).

The criteria for difficulty in this thesis are lexical density, grammatical intricacy, complex nominal group and grammatical metaphor, all of which are aspects of vocabulary and grammar. Register is a deployment of grammar. Indeed, congruent language is direct and there is a simple relationship between grammar and semantics. Grammar gets directly mapped in meaning. But register changes the relationship between grammar and vocabulary. Children in their first language first learn congruent and then incongruent language which is a twisted, adapted and modified form of language. As Martin has noted, register is parasitic on syntax and meaning (personal communication, 1995). That is why register is involved in higher level of language proficiency. Admittedly, since the subjects of this research are not investigated over a period of time, it can not be claimed that there is an order of congruency and incongruency for them. To answer such a question, a long term study is required. But, based on all the findings in this section, it can be claimed that in this cross-sectional study, an order of difficulty in terms of congruency and incongruency is observed for the students. It looks likely that there is such an order for ESL/EFL students.

Moreover, in the light of the results of this section, it seems reasonable to consider factors other than sentence length and vocabulary

length and familiarity as determiners of difficulty. In other words, Incongruency of the text can be a factor which adds to the complexity of the text. This will further be documented in the other parts of this study.

3. REGISTER COMPLEXITY AND FL READING

The hypothesis stated in this section is that as the texts become more complex in terms of register, there will be a change in strategy for decoding. In other words, the question is whether the proportion of acceptable responses in syntax and semantics, and appropriate responses in register, changes when we move from easy tests to the more complex ones. A mixed model Anova was performed on the data to find the effect of register complexity (as an element of text difficulty) on FL reading as measured by the scores in syntax, semantics and register in cloze tests. The results which are obtained from the analysis in multivariate tests of significance are presented in tables 25, 26 and 27 on pages 133-134.

The effect of interest to this research question, namely the effect of register complexity on the FL reading appeared to be significant. There is a significant difference in the scores in all categories of syntax, semantics and register. The proportions of semantically acceptable responses decreases as the tests get more complex ($F = 164.5$, $P<.001$). Similarly in syntax, the proportions of acceptable errors decrease as we move to the more difficult tests ($F = 96.8$, $P<.001$). In register also, the proportions of appropriate errors decrease as a function of the complexity of the test ($F = 61.8$, $P< .001$). In all, there is a significant change in strategy for decoding by all the subjects having different levels of FL proficiency across the texts with different complexities in terms of register. So, the findings in this section support the hypothesis.

The result of this finding can best be shown in the percentage of responses of all groups in syntax from codes 0-4 (for illustration of each code category refer to appendix V), in semantics from codes 0-6 and in register from codes 0-1 (appendices VII, VIII and X). In all categories of syntax, semantics and register, when we move from the easiest test (no. 1) to the most difficult test (no. 4), the percentages reduce in the completely acceptable codes (4 in syntax, 6 in semantics and 1 in register). On the other hand, those of the totally unacceptable code (0 in all categories) increase as we get to the most complex test. This reveals that as the tests get more complex, it gets harder for everybody to respond correctly, no matter how proficient he/she is.

As table 28 on page 135 represents, comparison of the three groups on their easiest test (no. 1) and the most complex test (no. 4) reveals that in syntax, the high and intermediate groups are affected by the difficulty of the text equally and more than the low group. The difference points are 19.9 for the high group, 20.3 for the intermediate and 18.04 for the low group. But in semantics and register, it is the high group which is affected by the difficulty of the text more than the other two groups (27.2, 24.6 and 14.6 point difference for high, intermediate and low groups respectively in semantics and 31.7, 26.5 and 23.1 for the three groups respectively in register). So, the subjects in the high group are able to respond more to the increase in text difficulty than the other two groups. In other words, high proficiency readers could modify their strategies more than the intermediate and low groups.

When the difference between the proportion of acceptable responses in all tests, that is the difference between the scores in tests 1 and 2, between those in tests 2 and 3, and between those in tests 3 and 4 is checked, interesting points come up. As shown in table 29 on page 136, for tests 1 and 2, the differences are small in all categories in high, intermediate and

low groups. But the difference between tests 2 and 3, that is when we move from congruent to the first incongruent test, is larger than that between tests 1 and 2. A greater drop in scores is seen here in all categories of syntax, semantics and register in all groups. Moreover, this drop is greater for semantics and register than for syntax. Again, from tests 3 to 4, the differences get smaller for intermediate and low groups than those between tests 2 and 3. This is not surprising because 3 and 4 are both incongruent tests. But this difference for the high group is still larger than that between tests 2 and 3. This renders support to the previous finding, namely the high proficiency subjects are more affected by the complexity of the text and their performance declines more than other groups in more complex texts. In general, the differential ability of the high group from the other two groups is manifested and is suddenly increased in test 3 in all categories especially in register. This is interesting because test 3 is the first incongruent one and therefore, it is where high group is showing itself higher than intermediate and low subjects.

As shown in appendices VII, VIII and X, the predominance of miscues (codes 0-3) on acceptable responses in syntax (code 4) is apparent for intermediate group on test 4 and also for the low group on tests 3 and 4 (47.5% acceptable versus 52.5% unacceptable ones). In semantics, the number of miscues other than completely acceptable ones (codes 0-5) exceeds that of acceptable ones (code 6) again in tests 3 and 4 for intermediate group and in all tests for the low group. This clearly shows the degree of difficulty of incongruent tests for the groups other than the high proficiency one. It also points out how weak the low proficiency subjects are in interpreting tests 3 and 4 specifically.

A more important effect is especially seen in register scores. In register, the number of miscues (code 0) is more than appropriate responses in test 4 for the high group, in tests 3 and 4 for the intermediate and in all

tests for the low group. As graphs 1, 2 and 3 reveal, syntax, semantics and register are all significant predictors, but register is the only factor where only the high group shows considerable variation. The difference for the high group is between tests 3 and 4, but for the other two groups, it is between tests 2 and 3. So, the thresholds are different. The graphs reveal that due to the difference in the thresholds in three groups, register is a major determinant of levels. This is clearly shown in the contingency tables for register scores (appendix XVIII). As explained in the previous section, the low and intermediate proficiency groups' scores are mostly clustered around scores 0-9 (the complete score for register test is 20). But the high group's scores are clearly superior, ie. 73.5% of the high proficiency subjects' scores are around 10-14 and 11.8% of them scored around 15-19. Even in the high group itself, there is difference between register scores in test 3 and test 4 (1.22 and 1.06 respectively). This shows the importance of register. So, there is the possibility that the scores in register are distinguishing the proficiency levels more than others, rendering support to the previous finding that the register of the most complex test is the most difficult part even for the high group which proved to be better than the intermediate and low groups in register. It again shows how difficult understanding register is in twisted form of incongruence. This is a difficulty that occurs even when high proficiency students are reading texts with more complex registers (this will be further described in section 7of this discussion). It seems that the case with high and low proficiency readers is what West (1979) describes:

> when the written passages are relatively easy to comprehend, the amount of limited processing resources that must be allocated to higher order processes is presumably small. A relatively large surplus of resources is then available for allocation to lower order processes. Thus, for easily comprehended passages, the total amount of available resources is likely to be sufficient to allow both skilled and less skilled readers to read the

passage. [But in more difficult texts,] a large amount of processing resources must be allocated to higher order processes. In this case the remaining amount of resources available for allocation to lower-order processes is small. Since the lower-order processes are efficient for skilled readers, the small amount of remaining resources is likely to be sufficient for the readers to read the passage. However,...[it] may not be sufficient for inefficient low-level processes of less skilled readers. If an extremely difficult passage is encountered, the resource demands of the higher-order processes may be extremely high. (1979, pp. 31-2)

The reason for the difficulty the subjects of this study have in tests 3 and 4 is that these texts are in a written mode of language which makes them less comprehensible to the readers, no matter how proficient they are in English. According to Halliday, this is not only restricted to ESL readers. Such problems arise for those readers whose mother tongue is English as well. For them, presumably, the same features of this mode of language such as lexical density, grammatical metaphor and complex nominal groups cause difficulty as for ESL readers (1989).

As explained in chapter 3, tests 1 and 2 are grammatically more intricate or complex than tests 3 and 4. The finding of this part provides more evidence of the claim put forward in the previous section of this discussion. It is stated that it is not syntactic difficulty in tests 3 and 4 which causes problem for FL readers but register complexity is hindering them from the full comprehension of the text. The results here indicate that difficulty is not caused by complexity at sentence level (clause structure) unlike what Biber (1988) states in Variations across Speech and Writing. Halliday trades off complexity at sentence level against complexity at the phrasal level. This is incongruency which is difficult to comprehend. So, the readers in this study comprehended the congruent material better although the syntax of the incongruent tests was not as intricate as congruent

ones. In spite of the low intricacy or complexity of the syntax in tests 3 and 4, they did not respond to them as well as to tests 1 and 2. It can be taken as an evidence that sentence length or sentence intricacy or complexity is not the main problem. It is register which causes the most difficulties.

The above finding is also supported by some other research. For instance, Cooper (1984) attempted an investigation of the role of some features of linguistic knowledge that were expected to cause difficulty on the comprehension of some practiced and unpractised university level readers. He came to the conclusion that practiced and unpractised readers were not distinguished clearly from each other "by their ability to understand the meaning carried by syntax. It is an area in which both groups are weak, and unpractised readers especially so" (p. 130). Moreover, knowledge of syntax showed the lowest correlation with reading comprehension. It is clearly shown in his results that the weakness of practiced readers, at lower grammatical levels did not block their comprehension of "larger meaning relationships between sentences, and by implication, larger chunks of texts" (p. 135).

Berman's (1984) conclusion in his study is in the same line as that of Cooper's. In an investigation of the role of syntactic complexity in the reading of advanced ESL students, he suggested that, "intra-sentential syntactic complexity might be more of an impediment to grasping scientific details than to overall ideas". He then adds that in order to get the gist of the whole text, "syntax may not be that crucial" (p. 146). From the results of these two studies as well as those of this study, it may be suggested that although syntactic knowledge helps the construction of meaning, seemingly it is not that crucial in the comprehension of the whole meaning of the text.

The finding that text difficulty has a significant effect on all three types of errors is consistent with the results of some other studies like those of Williamson and Young (1974), and Kibby (1979) researching on the

intermediate grade readers using oral reading, Bendar (1987), Kleitzen (1991) and Olshavsky (1978). The types of errors produced in native language by children and also EFL readers seem to be influenced by the different complexities of the text. What the findings of this study add to their conclusion is that the number of register based appropriate responses is also affected by the difficulty level of the text. This points out to the necessity of taking the difficulty of the text into consideration systematically in any attempt to interpret the strategies readers use in reading.

The interesting point is that although most teachers first focus on vocabulary as something which causes difficulty for the readers, according to Halliday (1989, p. 15), " The difficulty lies more with the grammar than with the vocabulary. In the last resort, of course, we cannot separate these from each other; it is the total effect of wording- words and structures- that the reader is responding to, and technical terms are part of this overall effect". He later adds "The problems with technical terminology usually arise not from the technical terms themselves but from the complex relationship they have with one another. Technical terms can not be defined in isolation;...." (p. 16). This is exactly found in this study, since the effect of technical and less frequent vocabulary is controlled and all the texts 1-4 contain the same words in this term. So, it must have been other features of texts 3 and 4 such as high lexical density, great use of complex nominal groups and high grammatical metaphor which have caused difficulty for readers.

Adding to the conclusions of the previous section, the finding here can be taken as a support to the claim made by systemicists about how the variables of mode affect the degree of complexity of the text. Tests 3 and 4 are representing different modes in terms of the semiotic distance between the writer/reader, ie. interpersonal distance and also that between the text and the social reality they are referring to, ie. experiential distance. These

two texts are using language as reflection and texts 1 and 2 use it in action. So, this is the degree of abstraction in tests 3 and 4 which makes them less comprehensible to the readers. The more the text is abstract, the less comprehensible it is. Therefore, one of the aims of this study, namely to prove which type of mode causes more problem in comprehending for EFL students is reached here. It is proved by the results that variations of mode is directly related to complexity and as a result, it is a source of difficulty for readers. In all, what is the cause of the differential effects in the use of syntactic, semantic and register cues in the text of differing levels of difficulty? In fact, the complexity of register has made the reading process difficult for the readers.

4. THE INTERACTION BETWEEN FL PROFICIENCY AND REGISTER COMPLEXITY

The hypothesis postulated in this section is that there is a difference in the ability of high, intermediate and low proficiency subjects to change their strategies in reading as the texts become more complex in register. In other words, there is an attempt to test if there is a difference between the proportions of acceptable and appropriate responses in syntax, semantics and register produced by high, intermediate and low proficiency students as the register complexity of the text increases. A Manova as well as non statistical comparisons of acceptable and appropriate scores are employed. In order to see if there is an interaction between FL proficiency and register complexity, Manova tests are done for syntax, semantics and register acceptable scores. As presented in tables 30, 31 and 32 on pages 137-139, the results obtained for semantics, syntax and register reveal the insignificant interaction between the two variables under investigation ($F = 1.21$, $P>.05$ for semantics, $F = .76$, $P>.05$ for syntax and $F = 1$, $P>.05$ for

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register). The multivariate tests of significance following the Anovas further show these insignificant interactions.

In an attempt to complete the investigation of the existence of the interaction between FL proficiency and register complexity, the difference between the acceptable scores in the easiest test (no.1) and the most complex test in terms of register (no.4) was calculated for each group in different categories of syntax, semantics and register, as presented in table 28 on page 135. For the high group, the difference between these two tests is 19.9 for syntax, 27.2 for semantics and 31.7 in register. For the intermediate group, the difference for syntax in tests 1 and 4 is 20.3, for semantics is 24.6 and it is 26.5 for register. For the low group, the differences are smaller in syntax (18), in semantics (19.6) and in register (23.1). As it is seen, the difference between the proportions of acceptable responses in easy and difficult texts is not equal in all categories for subjects with different levels of proficiency. In other words, high, intermediate and low proficiency subjects differ in their changes in acceptable scores from test 1 to 4.

An interesting point to mention is that low proficiency subjects show less change in all categories in easy and complex tests, indicating lower flexibility in changing strategies as they move from easy to difficult texts than high and intermediate students. The highest degree of change in strategy by high proficiency subjects may be ascribed to a greater flexibility in changing strategies on the part of the readers. Therefore, the three groups' scores differ in a nonparallel fashion. This finding shows that the change in proportions of syntactically, semantically and register based acceptable responses over different complexity levels of text varies as a function of and is affected by the subjects' proficiency levels.

In order to make the point clearer, it seems appropriate to represent the plots of interaction explained by Howell (1985). According to him, the meaning of interaction is that "the effect of one variable depends upon the level of the other variable" (1985, p. 260). He presents plots of no interaction as the following:

Graph 4: Plot of no Interaction (Howell, 1985)
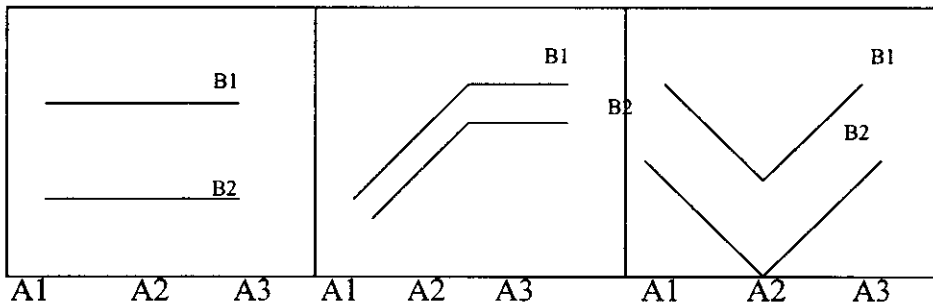
According to him, in all these plots "the difference between B1 and B2 (the effect of B) at A1 is the same as A2 and at A3" (p. 260). So, in the case of no interaction, the lines are completely parallel. But when there is an interaction, the lines in the plots are nonparallel. In all the plots which he presents as an evidence of interaction, the lines do not move in a parallel way like the following:

Graph 5: Plots of Interaction (Howell, 1985)
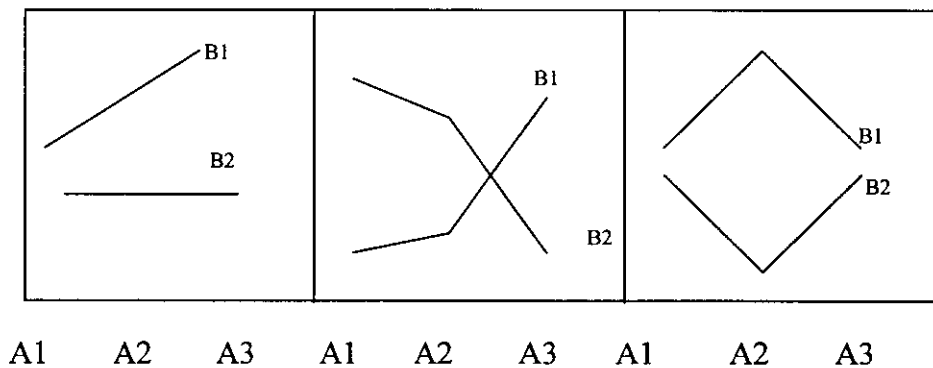
In all these examples, the effect of B is not the same at A1, A2 and A3. According to statisticians, the best way of interpreting interaction is plotting the means of one variable separately for each level of the other variables (Howell, 1985). A close look at the graphs 1-3 on pages 136-137 reveals that the lines do not move as parallel as those plots which show no interaction. To compare, they can be similar to the first plot of interaction in the above table. The main effect of proficiency (high, intermediate and low) is not parallel in tests 1 and 4, and also the difference between the three groups of proficiency at test 1 is not the same as at test 2, at test 3 and at test 4. But according to Howell (1985), "Whenever the lines are (significantly) nonparallel, we say that we have an interaction" (p. 261). In the case of this study, such a difference exists, ie. they are actually nonparallel. But the results of the Anova indicate that this difference is nonsignificantly nonparallel. So, while there is an appearance of a non-parallel relationship, the statistics used do not raise this above chance. It is possible that a relationship could be uncovered by more sensitive instruments or statistics.

5. LOW FL PROFICIENCY AND THE THRESHOLD QUESTION

The hypothesis put forward is that low FL proficiency may block the transfer of good L1 reading strategies to reading in FL. The results of the non statistical computation in two stages support this hypothesis.

Part 1

In the first stage, two groups of subjects with equal FL proficiency but different L1 reading were chosen and their acceptable and appropriate responses in English and Farsi cloze tests were computed (21 good and 21 poor L1 readers). The first question to answer is whether good L1 readers

are good FL readers too or not, ie. if good L1 readers can maintain an advantage over poor L1 readers in English.

Following Clarke (1979), it is assumed that considering their equal FL proficiency, good L1 readers who are supposed to have superior reading strategies in L1 are able to apply this superiority to FL reading. In other words, if transfer actually occurs, there might be positive correlation between L1 and FL reading. This part is also an attempt to test whether reading universal hypothesis is found to be right in the case of the subjects of this study. The profiles of the two groups are presented in appendices XI and XII. Both groups represent different abilities in their readings in Farsi. The good L1 readers' mean is 52 and its range is 49-57 while the poor L1 readers' mean is 42 ranging from 36-47. The means and the two point spread indicate that their Farsi reading abilities are different. The result of the T-test between both groups reveals that the difference between their Farsi reading abilities is significant (P<.001).

The two groups' scores in English proficiency show that they are of equal FL proficiency. The mean of the proficiency of good readers is 70.95 ranging from 61-81.25 and that of the poor readers is 67.7 with a range of 61-81. The result of the T-test presented in table 33 page 140 indicates a nonsignificant difference between the FL proficiency of both groups (P>.05). From the tables in appendices XI and XII, there is the evidence that good L1 readers are good FL readers. The rank order of the two groups is maintained in English. Firstly, the result of the correlation between L1 and FL reading of both groups (table 34, page 141) indicates the existence of a significant though weak correlation between their reading in both languages. Although the correlation between their performances is quite weak, it does exist (r =.33). Moreover, different components of Farsi cloze test (L1 syntax and semantics) correlate weakly but significantly with FL syntax and semantics (r=.35 for syntax and r =.29 for semantics). This weak correlation

exists also between English cloze test and L1 syntax and semantics (r =.34 for syntax and r =.31 for semantics).

Secondly, there is a 6.2 percentage point difference between the acceptable means for both groups on the English cloze test. T-test analysis was performed on acceptable total scores of English cloze tests and also on their total scores in syntax and semantics (tables 35, 36 and 37 on pages 141-142) to see if there is a significant difference between the means of the English cloze tests of the two groups. The result shows a significant difference between good and poor L1 readers' ability in doing FL reading cloze tests (P<.05). Similarly, the T-test between the means of the syntactically and semantically acceptable scores of both groups proved a significant difference between them (P<.05 for S and P<.05 for M). Although there is a 26 point overlap in the range of scores, good L1 readers are still good FL readers. The finding so far leads to the acceptance of "reading universal hypothesis" which maintains that reading ability is acquired once and there is no need to be learned in the second language again.

To complete the investigation in this part, the unacceptable responses of both groups are then analysed in order to compare the use of reading strategies in Farsi and English. The scales used for scoring the responses are described in chapter 3. The percentages of each code categories (0-4 for syntax, 0-6 for semantics and 0-1 for register) are presented in appendices XIII, XIV and XV. The table presented for syntax shows that good L1 readers perform better and give more acceptable responses in syntax. The comparison among tests1-4 indicates the effect of text difficulty on both groups, with the proportion of totally acceptable responses reducing as the texts get more complex. In the average of all tests, in category 4, the scores of good L1 readers exceed those of poor L1 readers (60.5% as compared to 53.1%)), while in the category 0, the totally unacceptable responses of poor L1 readers are higher than those of good L1

readers (31.2 % as compared to 23%). The same picture is repeated in the proportions of semantically acceptable responses. Good L1 readers' responses are of a better quality than poor L1 readers' responses (41.1% as compared to 36.9%). Likewise, in register, the mean of the 4 tests shows that good readers have responded more appropriately (44.75% as compared to 38.5%). Therefore, the findings in this part show that the advantage of good L1 readers is maintained in FL reading.

To come to a better understanding about both groups' reliance on syntactic and semantic cues in both Farsi and English cloze tests, the percentages of syntactically acceptable responses (SYNAC 4) and semantically acceptable responses (SEMAC 5 +6) produced by both groups in Farsi are compared with English cloze tests (tables 38 and 39 on page 143). In Farsi, as shown in the tables, good readers relied on semantic cues more than syntactic cues (74.8 % in syntax versus 78% in semantics). The poor readers on the other hand, relied on syntax (71.5%) more than semantics (65.2%). This shows that in their L1, good readers are more sensitive to higher order processing than on the bottom-up processing of the text.

In English, both groups, regardless of their ability in reading in Farsi, rely on syntax more than semantics. The comparison between the two groups showed that good L1 readers relied on both syntactic and semantic cues more than poor L1 readers (60.5% versus 53.1% in syntax and 45.2% versus 39.7% in semantics). But the advantage enjoyed by the good readers in the use of semantic cues in mother tongue reduced significantly in English (12.8 % to 5.5%). What is interesting to point out in the two groups' difference is the use of syntax in both languages. Their difference in Farsi is only 3.3% while it increases to 7.1% in English. This finding indicates that while having the good strategy of relying more on semantic cues than on syntax in their mother tongue, good L1 readers' use of syntax

in English increases much more than their use of semantic cues (60.5% versus 45.2%). In other words, good L1 readers' use of syntactic cues increases, while their reliance on semantics decreases in English. It is clearly found that in Farsi good readers focus on meaning rather than grammar. The opposite is true with poor L1 readers. These readers are more sensitive to grammar rather than meaning in Farsi. They are not able to produce as many semantically acceptable responses as good readers in their L1. In English, they do not change and they still focus on syntax rather than meaning.

Although good readers produce more acceptable responses in both languages in the categories of syntax and semantics, the distinction between good and poor L1 readers is reduced in their reading in English. In fact, the good readers are not able to maintain their advantage in the use of semantic cues because of the difficulties of reading in the FL (English). This is clearly illustrated in the percentages of acceptable responses in syntax and semantics when we compare the differences in both languages. In Farsi, the difference between the two groups in syntax is 3.3% while their difference in the use of semantic cues is 12.8%. This shows that in their mother tongue, the good group relies on semantic cues more than poor readers. In English, the difference between the two groups in the use of syntactic cues is 7.1% (ie. 4.2% point more than in Farsi), while their difference in the use of semantic cues is 5.5% (ie. 7.3 % point less than in Farsi). This further indicates that good readers are less able to use semantic cues in English than in Farsi.

Therefore, there is some indication of the transfer of good skills, since good readers do better than poor readers in both languages but their advantage reduces much in English. It may be concluded that the effect of inadequate English proficiency causes the good readers to pay attention to decoding rather than high level skills, the factor which "short-circuits" good

readers' system or reading habits. The results of this part support the contention that there are some good readers in the first language who are not good readers in their FL because they are not able to transfer their good strategies (Clarke 1979, Laufer and Sim 1981).

Part 2

To complete the investigation of the existence of low FL proficiency "short-circuit" effect, a comparison of high and low proficiency subjects' acceptable responses in English cloze tests is made in the whole population. In fact, the performance of good and poor L1 readers within each group of low and high proficiency subjects is compared. The assumption is that good L1 readers with high proficiency in English differ in their ability in using syntactic and semantic cues from poor L1 readers with high FL proficiency. The opposite assumption is held for good and poor L1 readers with low proficiency. It is assumed that due to their low proficiency in the FL, there is no difference between good and poor L1 readers within the low proficiency group in the use of syntactic and semantic cues in English texts.

Among the high FL proficiency readers, the result of the comparison, reported in table 40 on page 144, reveals that good L1 readers use semantic cues more than poor L1 readers (56% versus 48%). The same picture is repeated in syntax, where good L1 readers make use of syntactic cues more than poor L1 readers (73% versus 67%). Although good L1 readers use syntax more than semantics, they are outperforming the poor L1 readers in both categories. What is most interesting is the performance of good and poor L1 readers within low FL proficiency group. In semantics, they both score equally (34% versus 34%), although their performance in syntax differs (51% versus 44%). The fact that good L1 readers in this group use more syntactic cues than poor L1 readers does not affect the threshold question, since Farsi syntax can not be directly applied in the FL and in fact

it does not seem to be transferred.   What seems to be more transferred is semantic strategies.

These findings are in the same line with the previous finding in part I. High FL proficiency readers with good L1 reading strategies are able to transfer this advantage to their FL reading due to their good command of English language.   Those with high FL proficiency but poor L1 reading ability do not have good strategies in their mother tongue to transfer to their FL reading.   That is why there is a difference between them and good L1 readers having a high proficiency in the FL.   Since the two groups (poor and good L1 readers with high proficiency in English) are above threshold, L1 reading strategies help them more.   But in the low proficiency group, there is no difference in the scores in semantics.   Although good L1 readers in this group already have good strategies of reading in their mother tongue, they are not able to apply these acquired good reading skills in their FL reading and they are equal to poor L1 readers with limited reading strategies in the mother tongue.   This possibly happens because of their inadequate knowledge of the FL which hinders them in using their acquired good strategies in their reading in English.   Since they are below the proficiency threshold, L1 reading strategies can not help, rendering support to short-circuit proposition found in the previous part.

The findings concerning the transfer of L1 reading strategies to FL reading seem to partly conform to the idea of universality of reading process or "universal hypothesis" as expressed by Goodman (1971).   His views about reading as a language independent process maintain that what a SL reader needs is "only minimal graphic cues in many cases" (p. 140) and mostly transferring good skills and strategies as well as acquiring some grammar and vocabulary knowledge.   But this theory on the universality of reading process is not supported in most research. This reflects reading to be a unitary, universal and concept driven

process (the latter being what top-down theorists believe). It is not always the case that those with good skills in L1 reading are necessarily good SL/FL readers (like the subjects of this study). As shown in the results of this part, other conditions must be maintained for this transfer.

The existence of a universality in reading process was the basis for Clarke's study (1979). The results of this section is in the same line as that of Clarke. So, a full detail of his study does not seem irrelevant to the research question of this study. He selected 21 low level ESL students and compared their Spanish (L1) and English (L2) reading ability by using cloze testing and a miscue analysis. Clarke's first assumption is based on the "reading universal hypothesis", hypothesising that in the case of equal proficiency, the superior reading skills of good readers help them to keep an equal advantage over poor readers in both languages.

Just like this study, Clarke's results only partially supported this hypothesis. Good readers outperformed poor readers in FL reading since the rank order of good and poor readers was maintained in L2 reading. There was also a positive correlation between English and Spanish cloze test performance. There was still a ten point overlap in the range of scores of both groups. To complete his investigation, he compared the unacceptable responses of good and poor readers in both languages. In their L1, good readers did better than poor ones in producing more semantically acceptable responses but relied less on syntactic cues in the text, while the poor group did the reverse. In their L2 (English) reading, the difference between good and poor readers diminished. In other words, good readers were not able to show their superiority in producing more semantically acceptable responses. With regard to the question of transfer, he argues, "Yet, when confronted with difficult blanks, the good

readers appear to be little better than the poor readers in producing high quality guesses" (p. 130).

To come to a more suggestive conclusion regarding the transfer of good skills in L1 reading to L2 reading, Clarke selected a good and a poor L1 reader within approximately equal levels of ESL proficiency. An oral reading miscue procedure was performed on their reading performances. The comparison of good and poor L1 performances gave similar results as his previous study. Although the good readers performed better than poor L1 readers in their L2 reading, their advantage substantially decreased in L2 reading.

The findings of Clarke's study, as well as those of this section of the present study question the top-down views to reading process, ie. emphasis on reading behaviour rather than language behaviour. The conclusion to this part is best described by Clarke (1979):

> While assumption of universals may be justified, the role of language proficiency may be greater than has previously been assumed. Cloze test performance and oral reading behaviour suggest the presence of a "language competence ceiling" which hampers the good L1 reader in his attempts to use effective reading behaviours in the target language; apparently, limited control over the language "short-circuits" the good reader's system, causing him to revert to "poor reader strategies" when confronted with a difficult or confusing task in the second language. (p. 138)

Similarly, Alderson (1984) refers to the "threshold of linguistic competence", namely foreign language readers do not transfer their good strategies across languages only if they have reached such a level of FL proficiency.

More recently, the possibility of the existence of a language threshold as well as the relation between L1 and L2 reading have been investigated by Bossers (1991). His data were put in a multiple regression analysis to find out the relationship between L1 and L2 readings and L2 knowledge. The result is shown in the following table:

Table 55. Regression of L2 Reading on L1 Reading and L2 Knowledge Predictor Variables (Bossers 1991)

	R2	t	p	B
L2 know.		7.95	.001	.73
L1 R	.72	2.07	.043	.19

The results show that both variables, L2 proficiency and L1 reading have a significant and strong role in L2 reading. Both of them contribute to 72% of the variance in L2 reading. The relative importance of L1 reading and L2 proficiency is shown in the above table, the contribution of L2 proficiency is four times as high as that for L1 reading. The findings of this part are similar to the outcomes of the present study in investigating the seventh research question of this study (see page 204). He came to the conclusion that although both L1 reading and L2 proficiency contribute to the unique variance in L2 reading, L2 proficiency is far more important in L2 reading than L1 reading.

In order to test if a language threshold does exist, he hypothesised that in the case of the existence of the threshold, a variance between readers was expected to be accounted for by differences in L2 knowledge only at low levels of L2 proficiency. He thought that a shift is expected to occur somewhere between lower and higher levels of L2 reading, in the form of an increase in the contribution of L1 reading at the cost of that L2 proficiency.

So, the same regression analysis was done on the least and most skilled L2 readers. The results are as follows:

Table 56. Regression of L2 Reading on L1 Reading and L2 Knowledge Predictor Variables for Least Skilled Readers, (Bossers 1991)

	R2	t	P
L2 Know.		5.40	.001
L1R	.46	1.46	.281

For most Skilled Readers

	R2	t	P
L2 know.		.869	
L1R	.34	2.47	.029

The results of his post hoc analysis performed in order to find out for which group L2 proficiency was the most important predictor and for which group L1 reading was the most significant contributor gave different results. As shown in the tables above, for least skilled readers, L2 proficiency is a strongest predictor of L2 reading. Instead, L1 reading contribution is not significant at all. On the other hand, for the most skilled L2 group, L1 reading contributes significantly to L2 reading and L2 proficiency does not contribute significantly at all to L2 reading. He concluded that "Firstly, although both variables contribute significantly to L2 reading, L2 knowledge is a more powerful predictor than L1 reading. Secondly, differences between the least skilled L2 readers are predicted only by differences in L2 knowledge. Thirdly, L1 reading comes into play as a significant predictor variable only at a relatively high level of L2 reading" (1991, p. 56). Although his results help clarify the threshold question, they cannot be

inclusive because he does not consider text difficulty as a factor affecting this threshold.

In this connection, Verhoeven (1990), compared the performance of two groups of Dutch and Turkish children learning to read Dutch as their first and second language respectively. The achievement of Turkish children revealed to be much lower than that of Dutch children. As he argued, this difference might be due to intralingual problems (those caused by the structure of L2 reading) and not interlingual, that is mother tongue interference for Turkish children. According to him, in the beginning stages of learning language, "L1 and L2 reading comprehension processes have highly intralingual characteristics" (pp. 108-9). Therefore, she concluded that the structure of the target language was responsible for the common problems when learners were trying to read an ESL text.

Perkins, et al (1989), in an attempt to search if there is a relationship between L1 reading and L2 reading also found a ceiling effect in their study. They revealed that there was no significant correlation between L1 and L2 reading in low proficiency subjects. A significant correlation between these two variables was found only in high proficiency subjects who scored between 430-469 in TOEFL. Then the researchers suggest this level of TOEFL to be a threshold ceiling under which the first language abilities in reading can not be transferred to their reading in L2. In other words, limited command of L2 blocks the transference of good L1 reading strategies.

The results of this present study render support to the finding of Laufer and Sim (1981), carried out to investigate if the problems of SL university students is a language or a strategy problem. The subjects were 6 undergraduate students who completed a course in reading comprehension in a FL and were instructed in reading strategies, and a control group of 6

teachers who had a high competence in English but had no formal instruction in the use of strategies.

To test the process of reading, the interviews were carried out to find out how the subjects arrived at the answers. They found out that although the subjects in the experiment group were able to apply reading strategies in their mother tongue, they were not able to use the same strategies as effectively in their reading in L2. They concluded that language difficulty was causing a reading block for them. But the control group was found to have no difficulty with the application of reading strategies. They attributed these subjects' good performance to their high L2 proficiency since they had no formal instruction in the use of reading strategies. From the interviews, they suggested that the nature of the existing threshold was a semantic one, "since words proved to be the main landmarks in detecting meaning" (p. 16). In all, they concluded that "Higher order reading strategies appear to be inefficient if the lower order language base is too insecure" (p. 17) and this solid language base appeared to be mostly lexical. With regard to this part of their study, their conclusion may be considered with doubt since they did not really go to the heart of the issue and did not consider the link between vocabulary and grammar.

The comparison of the results of all these studies with the findings of the present study provides an indication that such a threshold does exist. A strong relationship between L1 and L2 reading only in high and advanced proficiency learners (found in Carrell 1991, explained in detail in section 7 of this discussion and also Bossers 1991) are all consistent with the possibility of the existence of a language threshold. What all these studies as well as the findings of this part of the present study suggest is that at the beginning stages of reading development, the most prominent predictor is language proficiency. If this command of language is under a certain level, efficient reading is hampered and good reading strategies acquired in the

first language are blocked to transfer to reading in the SL, what Clarke (1980) calls the "short-circuit hypothesis" (p. 120).

However, the level of this threshold requires further research to be determined and it cannot be defined in absolute terms. Other factors such as the complexity of register, as shown in previous sections (the more demanding the task, the higher the threshold), the level of L1 reading and the level of background knowledge (the more the prior knowledge, the lower the threshold) as compensating for the lack of L2 knowledge and also setting, ie. foreign versus second language (Cummins 1979, Alderson 1984, Carrell 1991) may be involved to explain other possibilities in the level of this threshold. Moreover, as emphasised by Bernhardt and Kamil (1995), none of these studies, as well as mine, do not determine what happens to the rest of the variance and what it is that accounts for some percentage of shared variance with SL/FL reading. It seems that now is the time to investigate other variables contributing to SL/FL reading.

In sum, based on these findings, it is suggested that the transfer of reading strategies does not happen automatically. While not conforming to the view of the universality of language, the results of this section suggest the importance of FL proficiency in FL reading and that it is not only limited to the early stages of learning the FL but it is true with those in advanced stages of learning FL. Moreover, not rejecting the top-down perspective on reading entirely, the results point in the direction that effective reading needs the use of both top-down and bottom-up strategies working effectively. This again puts the emphasis on reading skills rather than language proficiency into question. It may well be the case that low FL proficiency blocks the transference of good reading skills and causes a short-circuit effect, but not only low SL/FL proficiency is responsible for this effect. Certain conditions have to be met in order to make this transfer possible. As highlighted by Devine (1988b), "much important research remains to be done in this area"

(p. 274). The next part is an attempt to investigate other factors in the text which might short-circuit the readers' ability.

6. REGISTER COMPLEXITY AND THE THRESHOLD QUESTION

The hypothesis states that good L1 readers' ability to transfer good reading skills from L1 to FL reading is blocked by register complexity inherent in the text via the writer. The nonstatistical analysis of the acceptable scores is used to help come to an answer. The acceptable scores of two groups of good and poor L1 readers (60 and 58 respectively) in easy tests (1+2) are compared with those in more complex tests (3+4). The assumption is that good readers are able to use their good reading strategies in their L2 reading only in easy tests but not in difficult tests. As revealed by tables 41 and 42 on pages 145-6, good L1 readers make use of semantic cues more than syntax in easy tests (59.84 % versus 52.65 %). But in difficult tests, their ability to use meaning rather than grammar diminishes significantly and they utilise semantic cues much less than syntax (35.97 % versus 58.9%). This finding provides stronger evidence for the findings in previous parts. In easy tests, there is not much to get in the way for good readers but in tests 3+4 (incongruent ones), the complexity of the register of the text blocks the good readers' ability to transfer their good strategies to FL reading.

The performance of poor L1 readers in easy and difficult tests is also interesting to observe. In both easy tests (1+2) and difficult tests (3+4), they respond equally to the semantic cues in the tests (43.3% in both). It may suggest that their reading strategies are so poor (weak) that it makes no difference whether the tests are easy or difficult. They have probably acquired no good reading skills to transfer to FL reading. But their scores in syntax are reduced (61.72 % in easy and 46.7 % in difficult tests). The

difficulty of tests 3+4 has caused them not to be able to use bottom-up strategies in reading, let alone top-down ones.

In sum, in this present study, not only low FL knowledge but also register complexity of the text are found to have a negative effect on the ability of good L1 readers to transfer their good strategies. These two factors together cause a ceiling effect in FL reading. Here again, the idea of "reading universals" is rejected. The results of this section suggest that some other reading components are more involved in the process of reading than top-down advocates believe. Some characteristics of the text which are contingent on language knowledge are affecting FL reading. Therefore, a top-down perspective is not sufficient to help us understand the process of reading adequately. An interactive approach is required in which all aspects of readers (specifically language proficiency) are involved as well as text characteristics (text difficulty) rather than reading strategies alone. The finding of this part together with those of the previous part point to the fact that the influence of both FL proficiency and register complexity seem to be very important. Moreover, the influence of text complexity is not limited to those at the beginning levels of FL knowledge but it affects high proficiency subjects as well.

The finding here renders support to the results of Kember and Gow (1994). They concluded that "English language ability could impose limits on the reading approach which the students are able to adopt. Students with limited English ability may be forced to concentrate on deciphering the text and therefore find it difficult to reach for global or holistic meaning. It is possible that there is some threshold level of English ability which is necessary before a deep approach can be adopted" (p. 9). Later, they add "If there is a threshold effect, its level is likely to depend on the nature of the task undertaken. Difficult texts and more complex tasks would require higher language abilities before a deep approach is employed" (p. 10).

The results of this section add to Clarke's contention about "language competence ceiling", namely text complexity may also have the similar effect of blocking the transfer of L1 reading strategies to the SL/FL reading. The significance of the finding in this part is that language knowledge that makes a ceiling effect is only one part of all the interactions occurring in FL reading. The knowledge about how more complex texts differ from congruent ones is another factor that leads to success in SL/FL reading. Although some other factors than language proficiency have been proposed to affect the threshold (see the discussion of the previous section), the level of this threshold may as well be dependent upon the difficulty or complexity of the text (the more complex the text in terms of register, the higher the threshold).

7. THE RELATIONSHIP BETWEEN FL READING, L1 READING, FL PROFICIENCY AND REGISTER COMPLEXITY

In addition to the analyses so far, a multiple regression analysis was done to provide more insight into the statistical relationship between the factors contributing to FL reading, ie. L1 reading, FL proficiency and register complexity. The aim of this analysis is to determine if FL reading is contingent on the level of subjects' FL proficiency, L1 reading or both and also how register complexity is affecting this relationship. If any one of the above-mentioned variables is significantly contributing to FL reading, important decisions can be made to remove the difficulties FL readers confront in their reading. Moreover, the claim made by some researchers might prove to be right, namely in the beginning stages of language learning, FL proficiency is more crucial to efficient FL reading, while in advanced stages, it is a reading problem rather than a language problem.

The results of the stepwise multiple regression analysis reported in table 43, page 147 indicate the effect of each independent variable (FL proficiency and L1 reading) on FL reading. In the first analysis on the whole population, both variables (FL proficiency and L1 reading) are proved to be significant contributors to FL reading, the proportion of variance of FL reading comprehension accounted for by FL proficiency is greater. Interestingly, the outcomes show that while FL proficiency is still a better predictor of FL reading, in tests 2 and 4 the contribution of L1 reading is more apparent and higher than that in tests 1 and 3 ($R2 = .22$ and $.21$ in tests 2 and 4 but $R2 = .16$ and $.12$ in tests 1 and 3). The results confirm those in the correlation analysis done in table 22 page 131 and table 44 page 148, where there is particularly a high correlation between proficiency scores and FL reading scores, while a weak but positive correlation exists between L1 and FL reading scores.

In the next part of this analysis, the two variables are put in the same regression equation to investigate whether both of them are significant when taken together or only one of them in the whole population (table 45). As shown in the table, adding L1 reading to the equation does not increase the squared multiple correlation coefficient ($R2$) greatly.

However, we are not concerned only with the total amount of observed variance in FL reading. The relative importance of each independent variable is also the question here. The separate contribution of each independent variable to the dependent variable is reported in table 46 page 149 for tests 1-4. In sum, the results indicate that FL proficiency is a greater predictor of FL reading in all tests while L1 reading contributes significantly but more weakly than FL proficiency in only tests 2 and 4. Moreover, since test 1 is the most congruent (the easiest) test and 3 is the first of incongruent tests (more complex), we are not able to come to a

conclusion about whether it is the easy or the complex tests in which L1 reading is contributing as well as FL proficiency.

The above analysis was done on the whole population regardless of their level of FL proficiency. To investigate if there is any difference in the amount of the two regressors, in two groups of high and low proficiency, separate multiple regression analyses are performed for the two groups (55 high and 63 low). As the results of the analysis for each regressor in separate formulae show (table 47, page 151), for the high group, both independent variables when put in the formulae separately are significant predictors of FL reading. The interesting point here is that as we move from test 1 to test 4, the observed variance of FL proficiency in FL reading increases and it remains the same in tests 3 and 4. So, with the increasing difficulty in the text, the proportion of variance of FL reading accounted for by FL proficiency increases in high proficiency subjects. The results of R^2 for L1 reading reveal a different relative strength of reading abilities in the mother tongue. For high proficiency group, L1 reading is also a significant but weaker predictor of FL reading in all four tests respectively.

Interesting points come up when the same analysis is done for the low proficiency group. According to table 48 page 152, when each regressor is put in the regression equation separately, the proportions of the variance of FL reading accounted for by FL proficiency in all four tests are significant. While they appear to be significant in all tests, the comparison of R^2 across the 4 tests indicates no consistent pattern of the weight FL proficiency has on FL reading. The amount of variance explained by L1 reading in all tests for the low group is .01, .04, .000 and .06 respectively. The significance test for R^2 indicates that L1 reading contributes to FL reading only in test 4. A possible comment regarding the significant contribution of L1 reading to FL reading in test 4 for this group can be that perhaps the subjects with a low proficiency tend to be largely guessing here.

While the above section investigates the unique contribution of each of the independent variables, in the next part of this analysis, first the combined and then the relative importance of each one of the independent variables under investigation are determined. The result of the differences in the strength of both regressors on FL reading in the two groups of high and low proficiency when both independent variables are put in the same regression formula is presented in table 49 on page 152. R^2 in the two tables shows the contribution of both FL proficiency and L1 reading together to FL reading. For the high group, R^2 is .27, .37, .46 and .53 in four tests, all of which are significant by F-statistics (test1 $F = 10$, $P < .001$, test 2 $F = 15.5$, $P, < .001$, test 3 $F = 22.5$, $P < .001$ and test 4 $F = 30$, $P < .001$). The amount of shared variance accounted for by both variables in the low group is .19, .14, .07 and .15 in all four tests respectively, all of which are significant in the F-test (test 1 $F = 7.17$, $P < .001$, test 2 $F = 5.28$, $P < .05$, test 3 $F = 3.67$, $P, < .05$ and test 4 $F = 5.55$, $P < .05$. Although R^2 is significant in both the low and high proficiency groups, it is more significant in the high group in four tests than the low group.

In the next stage, the result of the analysis for the relative importance of each regressor in table 50 page 153 reveals that for the high group, both variables (FL proficiency and L1 reading) significantly contribute to FL reading in tests 2 and 4 (Prof. $T = 4.25$, $P < .001$ and L1 R $t = 2.40$, $P < .05$ in test 2 and Prof. $T = 5.85$, $P < .001$ and L1R $T = 3.42$, $P < .001$ in test 4). Here, L1 reading as well as language proficiency show up as predictors of FL reading. But unlike the results of the analysis for the whole population, in tests 1 and 3, mother tongue has no significant contribution and it is only FL proficiency which is a significant predictor of FL reading (Prof. $T = 3.88$, $P < .001$ and L1R $t = 1.16$, $P > .05$ in test 1; and Prof. $t = 5.87$, $P < .001$ and L1R $t = 1.63$, $P > .05$ in test 3).

A different relationship in the value of significance of each regressor (FL proficiency and L1 reading) is found in the low group. As table 51, on page 154 reveals, FL proficiency significantly predicts FL reading in all 4 tests (test1 $t = 3.66$, $P<.001$, Test 2 $t = 2.75$, $P<.001$, test 3 $t = 2.70$, $P<.001$, and test 4 $t = 2.51$, $P<.05$). Instead, L1 reading does not contribute significantly to FL reading in all tests (test 1 $t = .40$, $P>.05$, test 2 $t = 1.28$, $P>.05$, test 3 $t = .338$, $P>.05$ and test 4 $t = 1.77$, $P>.05$). In all, the findings of this part support the possibility of the existence of a relationship between L1 and FL reading in high proficiency readers.

The effect of text difficulty or register complexity is implied in all regression analyses. In the high group, the predictive level is higher, ie. as the tests get harder, the more predictions we get. The harder the tests become, the more the scores become associated with proficiency for the high group. In the low group, there is not much predictive power. Actually, for this group, neither L1 reading nor FL proficiency is predicting the scores. As the texts become more difficult, the low proficiency subjects become more baffled. They are so confused that they are not using strategies in action. Once again, this finding fits with the view of threshold hypothesis and reconfirms the findings in previous sections. To summarise, the findings of different parts of this study, while being consistent with the findings of other studies (Segalovitz, et al 1991, Clarke 1980, Hudson 1982), suggest that firstly a crucial role is played by lower-level processes and secondly that higher-level processes can come into action when lower-level processes have reached a certain threshold.

During the analysis, it was found that topic or content was also an issue. For the high group, mother tongue reading strategies help only in tests 2 and 4. Moreover, for the low group, in the analysis of separate contribution of each variable in the low group (table 48), language proficiency accounts for a significant proportion of the variance in FL

reading in all tests while the contribution of L1 reading is significant in only test 4. Although L1 reading in test 2 does not reach significance, it seems that tests 2 and 4 involve more L1 reading in this group too. A possible explanation might be in terms of the content familiarity as expressed by those subjects who were interviewed. As explained before, we were first concerned with comparing the tests two by two. Therefore, the topics of the four tests were matched together two by two, ie. the subject of tests 1 and 3 is "hibernation" and that of tests 2 and 4 is "water characteristics and cycle". In this way, we cannot call it a complete control of content, although it was enough for our initial concern. As the subjects in different groups reported in their interviews, the tests with the subject about water (2,4) had been easier for them to understand than those talking about hibernation in frogs and other animals (1,3). Thus, there is an indication that content familiarity has a very significant effect on the subjects' ability to interact with the text. In other words, a strong interaction seems to exist between background knowledge and reading as measured by cloze tests. Mother tongue strategies in reading have helped only in those tests with a familiar topic. In other words, the content familiarity has had an effect and helped the activation of the strategies acquired in reading in the mother tongue. Therefore, this may explain why even high proficiency readers do not use their mother tongue reading strategies in test 1 and 3 while they do in tests 2 and 4. Here, the difficulty of topic perceived by he subjects in these two tests has caused them not to be able to transfer their good strategies of L1 reading. Although test 4 is technically complex, there is some indication that the effect of content familiarity is stronger than the effect of difficulty in the text. Even in the low proficiency subjects who were shown to be unable to transfer their good reading strategies due to their inadequate knowledge of language, a trace of such effect is found.

The findings of this part can be taken as further evidence for Hudson's (1982/1988) finding. He tried to investigate the relationship between language-specific and language-independent skills and their impact on L2 reading. His first research question was the examination of the effect of conceptual knowledge on L2 reading. He came to the conclusion that short-circuit or ceiling effect was not only caused by limited L2 proficiency, but also by a lack of conceptual knowledge. He found out that "the advanced L2 readers in English apparently have more facile or robust networks for fitting meaning than do lower level readers" (p. 197). To him, "a breakdown in second component processing [the use of schema] can cause disruption in first component processing [language skills]" (p. 198). Claiming that reduced schemata can help override the effects of L2 linguistic ceiling, he found that if consistent schemata were used, this would allow the subjects to have access to language decoding which was otherwise not accessible to them. It can be added that it is not only SL /FL proficiency and induced schemata but also register complexity which hamper good L1 readers from transferring their good L1 reading abilities to their SL/FL reading.

Moreover, the results of this part provide further evidence for the interactive model of reading, stating that comprehension is not the result of only what is in the text. Reconstruction of the meaning of a text requires an interaction between the content of a text in addition to the background knowledge the reader brings to the process of reading, the schemata stored in his long-term memory. The results indicate that the construction of meaning is not only dependent on the meaning within the context of the text but also sociocultural knowledge of the reader is also important in FL reading. More specifically, although the most high proficiency readers of this study are proficient enough to cope with a text which is the most congruent one and/or the easiest test (test 1), mother tongue does not help

because of the unfamiliarity with the topic of the test. Therefore, the factors intrinsic to the reader are as important as those intrinsic to the text. In fact, they interact together to affect comprehension of the text. This supports our model of reading, stating that the process through which the reader goes is as important as the product or text itself. According to Alderson and Urquhart (1984), a product view of reading is only related to what the readers get from the text whereas a process view is concerned with the way a reader comes to an interpretation of the text. In the case of this study, as expressed in our model, there is an interaction between the product and the process of reading. As Wallace (1992) points out, "Texts do not 'contain' meaning; rather they 'have potential for' meaning. The potential is realised only in the interaction between text and reader. That is, meaning is created in the course of reading as the reader draws both on existing linguistic and schematic knowledge and the print provided by the printed or written text" (p. 39).

On the other hand, contrary to what top-down theorists posit, reading is not only a top-down process and as Eskey (1988) states, the use of top-down strategies (use of the background knowledge) is not the hallmark of good readers and the fluent and accurate reading requires "a constant interaction between bottom-up and top-down processing, each source of information contributing to a comprehensive reconstruction of the meaning of the text" (p. 94). It is not the case that good readers are necessarily good interpreters, but they are "both good decoders and good interpreters of texts" (p. 94). In addition to all these, efficient and accurate interpretation of the a text is dependent on other important variables, one of which being the complexity of the text.

Moreover, these results do not seem to support the interactive compensatory model of Stanovich (1980). In this model, it is assumed that a strength in one of the sources of knowledge can compensate for the

weakness in another area. Although advanced or high proficiency readers are expected to take advantage of their high decoding skills in order to overcome their lack of background knowledge in tests 1 and 3, this compensation strategy is not used. The lack of prior knowledge prevents them from using their good strategies in their first language in reading texts in the FL. It seems that Hock's (1990) conclusion best describes what happens to the readers in this regard:

> it could be said that when FL readers possess less information (ie. a less elaborated schema) to integrate with that found in the text, their ability to reconstruct the meaning of the text inevitably suffers. It may be that the topics, concepts and ideas in texts were not within the knowledge base of the reader in sufficient amounts to be efficiently accessed. (p. 224)

In addition to all these, the findings here are further evidence of our model of proficiency too. According to Martin, while considering the duality of form (linguistic) and content (contextual), "the meaning is constructed on all levels" (1992, p. 496). In terms of our model of language, therefore, there is a relationship between form and extra-textual factors related to the context of situation and in terms of our model of reading, there is an interaction between the two.

In order to come to an inclusive conclusion about the research question of this part, it seems reasonable to compare these results with the findings of studies having the same focus. The study that followed the issue of the relation between SL/FL proficiency, L1 reading and SL/FL reading is that by Carrell (1991). Although Carrell fails to measure L2 proficiency accurately and she does not consider the difficulty of the text into consideration, her findings compare well with the conclusions here.

Carrell's (1991) study was an attempt to investigate the effects of L1 reading ability and L2 proficiency on the subjects' reading English as a foreign or second language. On the basis of Alderson's prediction about the relation between these three variables, she hypothesised that both L1 reading ability and L2 proficiency played a significant role in L2 reading ability. She also investigated the relative importance and the involvement of these two variables in L2 reading.

To answer the research question of her study, she put both reading ability in L1 and L2 proficiency into the same regression formula first for all subjects and then for both groups separately to investigate the relative strength of both regression predictor variables. The results are displayed in the following tables:

Table 57. Model Statement: L2R = L1 R + L2 Proficiency Levels (Carrell 1991)

	R2	t	P
L1 R		4.63	<.001
L2 prof. levels	.40	7.59	<.001

Group 1, Spanish L1

	R2	t	P
L1 R		3.95	<.001
L2 profi. levels	.35	2.20	<,05

Group 2, English L1

	R2	t	P
L1 R		2.35	<.05
L2 profi. levels	.53	8.12	<.001

The results show that both independent variables are significant predictors of L2 reading. Together, they account for .40 of the variance in L2 reading ability. The separate and significant contribution of L1 reading ability and L2 proficiency account for 35% for the Spanish L1 group and 53% for the English L1 group.

Carrell then investigated the amount of contribution of predictors to L2 reading for each of the two groups separately. In comparison of t-values of each of the two variables, she found that different relative importance of these two variables for the groups emerged. For Spanish L1 group, L1 reading ability was a stronger predictor of L2 reading (t = 3.95) than L2 proficiency (t = 2.20). The opposite picture was true for English L1 group. For them, L2 proficiency (t = 8.12) was a stronger predictor of L2 reading than L1 reading (t = 2.35). Carrell suggests that this difference may be due to the differences in the environments of learning for the two groups, ie. for the first group, it is a 'second' language setting but for the second group, it is a 'foreign' language. It seems to be a reasonable interpretation because for Spanish L1 group, English is spoken in the environment, therefore, they are at a higher level of proficiency than the second group who learned English in a FL context. She adds another explanation in terms of the differences in the absolute level of proficiency of the two groups which can fit to the idea about the existence of a language threshold (explained in section 6 of this discussion). But the important point is that she has not measured the actual level of the proficiency of the subjects.

On the other hand, the results of the study done in a FL context by Chiramani (1992) only partially support what has been found in Carrell's (1991), Bosser's (1991 explained in detail on page 197) and the findings of this study. She postulated that a significant relationship existed between EFL language knowledge and EFL reading ability but there was no significant relationship between reading ability in Thai and in English. She performed a regression analysis on her data. When both variables were put in the formula, together they accounted for 46% of variance ($R2 = .4626$, $F = 30.57$, $P<.01$). But the parameter estimates revealed that only FL proficiency significantly contributed to EFL reading ($t = 7.48$, $P<.01$) for the whole population. In an analysis done for high and low proficiency groups, it was revealed that even for high language proficiency subjects, only EFL language knowledge contributed significantly to EFL reading ($t = 3.035$, $P<.01$).

She concluded this part of her study with two possibilities. According to her, "it might mean that the claim that L1 reading will influence L2 reading ability in learners with high language knowledge can not be made general. Or it may imply that even the EFL language of high language scorers is not sufficiently high to allow for the transference of L1 reading skills into L2 reading to take place, let alone that of the medium and low scorers" (1992, p. 212). With regard to other findings in subsequent parts of her study, it seems that the second possibility is more appropriate than the first one since it is found that all the subjects participating in her study are beginning EFL language learners who are in developing stages of the acquisition of English language, as she asserts. We may conclude from her study that transference of L1 reading skills is possible when the learners are in a stage of acquiring the FL which helps them interact accurately and efficiently enough with the text as well as being able to use all their top-down and bottom-up skills in an interactive way.

The outcomes of the studies by Carrell (1991), Chiramani (1992), Bosser (1991) as well as those of this study reveal that SL/FL reading is more a language problem than a reading problem. It is also revealed that it is more a language problem than a reading problem for low proficiency subjects. In higher levels of proficiency, when a threshold level is reached, L1 reading ability gets more important but it does not mean that the effect of language proficiency reduces. It has commonly been seen that even in high proficiency subjects who have passed a certain amount of language knowledge, the effect of SL/FL proficiency still exists. In this relation, therefore, Alderson's hypothesis has been an appropriate one: "Poor foreign language reading is due to reading strategies in the first language not being employed in the FL, due to inadequate knowledge of the foreign language. Good first language readers will read well in the foreign language once they have passed a threshold of foreign language ability" (1984, p. 4).

In sum, all these can best be summarised in Eskey's position in "Holding in the Bottom" (1988) when he states:

> the fluent reader is characterised by *both* skill at rapid, context free word and phrase recognition and, at higher cognitive levels, the skilful use of appropriate comprehension strategies. For the proper interpretation of texts the latter skills are crucial, but such lower-level skills as the rapid and accurate identification of lexical and grammatical forms are not merely obstacles to be cleared on the way to higher level "guessing game" strategies, but skills to be mastered as a necessary means of taking much of the guesswork out of reading comprehension. (p. 98)

8. READABILITY FORMULAE AND TEXT DIFFICULTY

The hypothesis states that traditional measures of text difficulty, ie. readability formulae are not adequate measures of text difficulty.

Nonstatistical analysis of the data as well as Fry's readability formula are used to test this hypothesis. The readability level of tests 1-4 is determined by Fry's readability graph. The result of this computation is represented in table 52 page 156.

Test 1 has a readability level of 8 and that of test 2 is shown to be 7. Therefore, using Fry's readability graph indicates that test 2 is easier than test 1. The readability level of test 3 is determined to be 8, ie. equal to test 1. And test 4 is the most difficult test with a readability level of 13.

As explained in chapter 2, the criteria used in this study to determine the difficulty level of the texts are those suggested by systemic functional grammarians. According to Halliday, different modes display various complexities of the text and since complexity is related to the lexicogrammar of the text, measuring the features of lexicogrammar is possible, ie. we can explicitly measure how comprehension of a text is based on the features of mode. In order to make sure what factors vary in different modes, it is necessary to consider the differences between spoken and written language (for further details refer to research question 3 on page 106). It is mostly believed that written language is more formal and grammatical and therefore more complex. But as he explains in Spoken and Written Language, each type of language has a specific type of complexity of its own. The way of organising the message in each type of mode is different. Speech is produced dynamically as an ongoing process while written language is produced synoptically as a finished product. So, it is not true to say that one form of language (spoken) is less complex than the other one (written), (refer to the discussion of research questions 2 and 3 for more

details). So, written language is complex in terms of high lexical density, high complex nominal groups and high grammatical metaphor, but spoken language is complex in terms of grammatical intricacy. In other words, written language is lexically dense but spoken language is grammatically intricate.

Based on the above views, the result of the computation of texts 1-4 in terms of lexical density, grammatical intricacy, complex nominal groups and grammatical metaphor are given in table 7 on page 111. As the research questions of this study necessitated , the order of difficulty was arranged on the basis of spoken to written language. So, text 1 proved to be the least complex text and as we move to text 4, the complexity of the text increases in terms of register.

The comparison of these two ways of determining the difficulty of the text reveals that test 1 which is the easiest or the most congruent text based on systemic criteria has a readability level of 8 by Fry's formula. The result for test 2 gives a readability level lower than that of test 1 (level 7), while it is .41 more lexically dense, .28 less grammatically intricate, containing .16 more complex nominal groups and it is .29 more grammatically metaphorical. Test 3 which is the first incongruent text has a readability level of 8 which is equal to the first congruent or the easiest test. The results given in table 53, page 157 reveal the differences between these two tests (1 and 3) in terms of systemic functional grammar. Test 3 is 1.84 points more lexically dense, contains 2.12 points more grammatical metaphor and .52 points more complex nominal groups. Test 4 has a readability level of 13 which tends to be more difficult than the other three tests even by Fry's graph.

In general, readability formula used was not able to distinguish between tests 1, 2 and 3 which are proved to have different levels of

complexity by using systemic functional criteria of complexity. An interesting point is seen in the comparison of tests 1 and 3. Although test 1 is the first of congruent tests, both contain approximately equal number of sentences per 100 words (4.8 and 4.5 respectively) and equal number of syllables per 100 words (137 and 136 respectively).

In order to further investigate whether the scores prove the feasibility of the difficulty as determined by Fry's readability formula or that of the systemic functional criteria used in this study, the scores of test 1 as the congruent and the easiest test is compared with those in test 3 which is the first incongruent test. Texts 1 and 3 are on related topics, as are texts 2 and 4. Also, the scores of test 2 which is the second congruent test are compared with those in test 4 as the most complex or incongruent one.

The results are reported in tables 53 and 54. The total scores of test 1 are higher than those in test 3 (60.4 versus 44.7). This may suggest that the congruent test (1) has been easier for the subjects of this study than test 3 since they have not been able to interact with test 3 as much as test 1. The subjects' scores do not confirm the use of readability formula because such a formula suggests that both tests are at the same level of readability (8). The comparison of test 2 and 4 gives a similar picture. According to table 54, page 157, in test 2, the subjects scored higher than in test 4 (54.2 versus 36.6). This is further evidence of the claim that congruent tests are easier than incongruent ones.

Therefore, the scores indicate that the four tests are of different levels of complexity. In fact, the variations in mode cause different levels of complexity and as a result differing levels of difficulty for the subjects, while readability formulae do not actually discriminate between at least the three first tests. In other words, readability formulae are not able to make a distinction between texts of different levels of congruency and incongruency

and they appear to have the same level of readability (8) by Fry's formula. The results here bring into question the validity of using a readability formula as a means to assign the difficulty level of the text. The scores of the students reveal that there are other text factors which influence the reading behaviour of readers than what readability formulae measure. The differences between the scores at tests of different complexities exactly confirm the text factors which might affect the performance of readers. A traditional readability formula like that of Fry (1977) can only determine the general readability level or the surface features of any text. But the real nature of linguistic complexity which might be the source of text difficulty for SL/FL readers can be determined by an analysis based on systemic functional grammar. Although readability formulae have been employed to determine the difficulty level of the texts in many studies, they, in fact, do not identify those variables which cause problem and are necessary for reconstructing or getting the meaning of the text.

Moreover, readability formulae just focus on text as products while, as discussed before, texts only contain potential for meaning, not the meaning itself. According to Rigg (1986), the underlying assumption made by most readability formulae is that meaning exists in the text and, "There is no recognition that meaning is created by reader as the reader engages with the text" (p. 75). The results of this study prove that factors other than word and sentence length must be accounted for, ie. variations of mode which can cause difficulty for readers. One apparent piece of evidence is that short sentences do not reduce the complexity of the text and therefore the difficulty in processing. Other than the length of the sentence as a determinant of difficulty, readability formulae do not consider the syntax of the sentence as a factor which contributes to difficulty. The results of this study do not support the claim made by them stating that shorter sentences are usually easier to comprehend. There are many short sentences which

are less accessible to the readers than long ones, as it was found in this study. To be more specific, tests 1 and 2 which contain long sentences in the form of spoken mode, proved not to create much difficulty in processing. Although these two tests are at a higher level of grammatical intricacy, they are easier for the subjects to comprehend. In other words, they are easy for readers to unpack, but more complex texts in terms of register caused the most difficulty due to their written form which is not as easy to unpack. Indeed, what is causing problem for the readers is complexity in phrase structure, the density of meaning or information at the group level, as claimed by Halliday, not grammatical intricacy. We can now securely claim that the analysis of a text within the framework of systemic functional grammar provides a better way of identifying the sources of the problem as well as that of the complexity of different modes.

The findings of this study support the results of a few studies examining the same issue. For example, Blau (1982) attempted to find the effect of syntax on readability of the text. His results challenge the sentence length criterion of most readability formulae which supposes that the shorter the sentence is, the easier it is to comprehend. He developed 18 short passages in 3 versions. The variables of vocabulary and content were controlled and only sentence structure varied among passages. Version 1 included short sentences, version 2, complex sentences with some clue showing the relationship between the parts, and version 3 consisted of complex sentences without such clues. In contrast with the criterion of readability formulae, version 1 with short simple sentences yielded the lowest comprehension scores. This was true of college students as well as some younger readers. He concluded that "lower readability level material, as measured by common readability formulas, does not facilitate comprehension for those ESL students. The sentence structure typical of such material may actually impede comprehension...." (p. 517). So, as he

predicts, other factors may determine readability more strongly than syntax or vocabulary, or "there may be factors that work strongly in conjunction with syntax and vocabulary" (p. 526).

Therefore, we can here disagree with Klare (1974-5) who contends that little is gained from using a highly complex formula unless one is interested in research. He points out that a formula with only two variables should be sufficient. Our study proves that it is not true since the frequency of words has been controlled and the remaining variable (as they contend) is syntactic variable. It is proved that tests 1 and 2 with longer sentences are not as difficult as tests 3 and 4 which consist of short but complex structures in terms of phrase and groups.

There have been many approaches to measuring the difficulty of the text, but of concern to this study is the inadequacy of readability formulae in doing this. Instead, there is an attempt to suggest ways of measuring the complexity of the text by a tool which focuses on all levels of language. Systemic functional criteria is suggested for this purpose since it considers many factors contributing to the complexity of a text. This approach studies language on all levels and therefore it provides a more sufficient tool for the analysis of the text and for determining its readability.

According to Halliday, (referred to in Martin 1993), grammatical metaphor used greatly in incongruent written language can "be interpreted as introducing tension between grammar (a text's wording) and semantics (a text's meaning) so that the language has to be read on at least two levels-one level directly reflecting the grammar and, beyond that, another symbolically related level reflecting the semantics" (p. 151).

The role that the language plays (mode) is directly related to the complexity the text has. As Martin (1993) states, In contrast to the written form of the language, in the spoken form "For the most part, grammar and

semantics harmonise; there is no tension between the two. The text only has to be read on one level to get its meaning across. In passages of this kind, then, a natural relationship is established between strata. The language sounds simple, authentic, convincing- a first hand account of what went on" (p. 152). The three components of the context of situation, ie. field, tenor and mode differ in different modes of language, making it more or less complex. Field talks about language and natural reality. In spoken language, it is common sense language, closer to real world experience. But the language of written form is that of uncommon sense full of technical taxonomies and uncommon sense accounts of processes, both being enough to add to the complexity of the text. Interpersonal dimensions of text also differs when we move from spoken to written text. These dimensions include the system which is deployed for expressing ability, usuality, probability, degrees of attitude and so on. In some abstract writing, according to Martin (1993), "grammatical metaphor is mobilised for interpersonal considerations....[the writer] draws on nominal group resources for constructing attitude" (p. 155).

Since reading is an interaction between reader and text, the difficulty of the text can not be determined by considering just the characteristics of text without involving the reader's characteristics (as readability formulae contend). Although they give some indications of complexity, readability formulae do not account for most of the variables which contribute to the difficulty of a text. If they are to be an adequate measure of text difficulty, they need to include more factors than word and sentence length. The criteria used in this study relate text features to comprehension problems on the part of the reader caused by these features. In this way, the characteristics of the text are combined with the information about the reading process. As Kintsch and Vipond (1979) state, readability is not inherent in the text characteristics only, but it is the result of an interaction

between text variables and information processing characteristics of the reader. In readability formulae, the only variable which accounts for semantic difficulty is word length or word list. As Klare (1984) states, although there have often been attempts to involve other variables than syntactic and semantic ones, they "failed almost entirely, but attempts to improve upon these two major sources of variance have continued" (p. 688). The scores of the subjects and the results of this part provide evidence that the true picture of readability is not as simple as what readability formulae claim to measure and as Davison and Kantor (1982) point out, the assumptions made by readability formulae may not always hold true.

Moreover, as Britton, et al (1982) argue, rare words and difficult syntax are not the only features that differentiate easy and difficult texts. Therefore, text difficulty or complexity must be determined by considering other approaches like register as a criterion which contributes to the complexity of the text. It is the time to include other variables in any attempt at ascribing the difficulty of the text. It can be a linguistic alternative to readability formulae. While readability formulae are used as predictors of readability, linguistic analysis of the text can be used to measure the complexity or readability.

CHAPTER 6

FOLLOW UP STUDY

Along with the scores on syntax, semantics and register in the cloze tests, interviews were conducted to find out which comprehension processes the subjects went through while reading the texts. The interviews aimed at assessing the strategies used by readers as well as their perspective and also how they approached different texts. In other words, the interviews looked for an indication of the high and low proficiency subjects' approach to reading comprehension, ie. which group of high and low proficiency readers approach reading as a top-down, a bottom-up or both. The subjects' self reports about reading and the processes they were involved in were collected as evidence of what strategies they use while reading. In analysing the interviews, the question was: do high and low proficiency subjects differ in their use of strategies in reading?

The use of such data has been emphasised by many reading experts. For example, as Ericsson and Simon (1980) point out, it is assumed that such data can add to our knowledge of the strategies readers use that otherwise researchers can not have access to. They suggest ways of increasing the accuracy of such data, one of which being to collect data from other sources and then compare it with the data obtained from interviews. Moreover, Afflerbach and Johnston (1984) state that verbal reports "provide veridical descriptions of cognitive processes underlying higher level

cognitive activity" (p. 308). They suggest it to be sometimes the only "avenue" for analysing the process through which readers go.

Due to the impossibility of doing the interview with all the population, a number of students from each group (7 high, 5 intermediate and 7 low proficiency) were chosen randomly to be interviewed. The types of strategies used by the high and low proficiency subjects as revealed in their responses to the interview questions (appendix IV) were classified using the strategies that have been investigated and included in previous research. The classification scheme is as follows: using syntax or grammar, pronunciation, recognising the structure of the passage or genre, using background knowledge, vocabulary (word), meaning, practice, guess, and dictionary.

From the responses the students produced, one or a combination of the above strategies were mentioned by them. Once the interviews were done, the responses given by each group were analysed to fit into one of the above strategies. The responses were coded as strongly emphasised (A), mentioned (B), and not mentioned (C). The number of responses conforming to each one of the categories were counted and compared among groups. An attempt was made to generalise from the responses of each group. The following table gives the number of responses to each category of strategies by high, intermediate and low proficiency subjects:

Table 58. Degree of Emphasis Given to Various Strategies by Three Groups

Strategies	High no=7			Inter no=5			Low no=7		
	A	B	C	A	B	C	A	B	C
Use of syntax	1	1	5	1	1	2	1	4	2
Pronunciation		8					5		
Recognising genre	1			1					
Use of background know.	5			1			1	1	
Vocabulary	3		1	4			7		
Meaning	6	1		4				2	1
Practice	2				1		4	1	
Guess	5	1		2			2	1	
Dictionary		4	1		4		2	3	2

A = strongly emphasised

B = mentioned

C = not mentioned

From the interviews, it is revealed that the strategies the students use in their reading process are different in subjects with differing levels of proficiency. Some of them emphasise decoding skills, some focus on individual vocabulary and some are more concerned with the meaning of the

text. The way these readers approach reading process influences the amount of their understanding the cues in the text and as a result their comprehension. From what the subjects expressed as the factors they consider while reading and also the factors they believe to constitute good reading, their approach is determined.

The interviews reveal that low proficiency subjects concentrate more on grammar (1 subject emphasises and 4 of them mention it as an important factor in reading). Moreover, they have more a word level strategy (all subjects strongly emphasise knowing the meaning of the individual words), although only 2 out of 7 students mention the meaning of the whole passage as important. All the subjects in the low group and some in the intermediate group emphasise learning vocabulary in order to reach efficiency in reading. They either explicitly emphasise or mention the importance of vocabulary in reading. They express their need and frequently appeal to the dictionary as a means which can help them come to a complete comprehension of the text (3 out of 7). One of them stated, "When I am reading a passage and I find a word unfamiliar to me, the first thing I do is find its meaning in the dictionary". To them, a text consists of a set of words and the meaning of the text is perceived if the meaning of all words are accessible to the reader.

Mostly, to low proficiency readers, good pronunciation is the determiner of a good reader (5 of them strongly emphasise it). In other words, to them, if someone can pronounce words well, he is a good reader. One of the students in the low group, when asked about the characteristics of a good reader, stated "My English teacher is a good reader because he pronounces the words very good [well]". In practice, they do not try to guess (only 2 out of 7) the meaning at all, rather they focus on decoding aspect of the text. About 1 out of 7 subjects emphasises grammar and mentions it as a determinant of good reading.

Very few of these students have a discourse based strategy of considering background knowledge as important in reading (1 out of 7

emphasises it and 1 out of 7 mentions it). Most of them emphasise the role of practice as an activity which contributes to efficiency in reading. Only a few of them take the meaning of the whole text into consideration (2 subjects). The following example is chosen from the cloze test done by a low proficiency student:

Then they move from <u>water</u> into shade.

In answer to the question, "Why did you choose *water* to fill the blank?", he answered "I chose this word because we need a noun after preposition". If he had paid a little attention to the meaning of the whole text, he would have known that the correct answer can be *sun*. He obviously has a narrow view to the meaning of the sentence and does not consider the meaning of the whole passage in order to decide on the word. Moreover, due to his low proficiency, he is not able to use his top-down processes (if available) to come to a decision about the word in the blank. This result supports the "short-circuit" hypothesis, which was accepted in the quantitative part of this study. It seems that low proficiency subjects short-circuit the interactive processes and mostly focus on the bottom-up processing of the text. According to the answers one of them gave to the questions, in Farsi, he appeared to be able to use the meaning of the whole text into consideration and tried to use his background knowledge to guess the word but he could not use this strategy in English. This is obviously caused by his inadequate knowledge of the language.

Later, these students were asked which tests, congruent or incongruent, were easier for them. Their answers to this question are so varied that they make coming to a generalised conclusion difficult. Some viewed tests 2 and 4 as the easiest tests since their topic was familiar to them. A number of them believed that test 4 had been the most difficult. Apparently, some of them are at such a low level of proficiency that it is impossible for them to understand which test has been easier or the most

difficult. In answer to this question, one of them stated, "They made no difference for me. All of them were of equal difficulty".

In contrast to low proficiency subjects, the interviews reveal that high proficiency readers have a different approach and use different strategies in reading. They appear to be more meaning-centred than sound and word-centred. They do not give the same importance to bottom-up or decoding skills. Only 1 out of 7 students emphasises and 1 out of 7 mentions the importance of grammar (syntax) in reading, while 5 of them view syntax as an unimportant aspect of reading. Three out of seven subjects emphasise the importance of knowing the meaning of individual words for efficient reading. Instead, they try to guess the meaning of words from the context.

Although it can not be generalised among all high proficiency subjects, one of them explained, "If I see a word the meaning of which I don't know, I first try to guess it from the surrounding environment of the sentence. The dictionary is usually the last resort for me". In all, using a dictionary is quite common among Iranian students (for further detail refer to the introduction of this study). This is demonstrated in the number of the responses which denote frequent use of a dictionary in all subjects, even high proficiency ones (4 of the high, 4 of the intermediate and 5 low proficiency students emphasise and mention the need to use a dictionary).

On the other hand, most of the high group readers express the meaning of the whole text to be important in leading one to an adequate and efficient reading (6 out of 7). They usually put less emphasis on knowing the pronunciation in the process of reading (only 2 of them mention it as important). The use of discourse based strategies is much higher in high proficiency subjects. Most of them state the use of background knowledge as a contributor to comprehending the meaning of the passage (5 subjects). One of them stated "The topic of the passage is very important in reading. I was successful in reading the passages because I knew the topics well and I

used my prior knowledge". Considering this together with 6 of them emphasising the meaning of the whole text as important, this is indicated that these subjects have a more top-down approach to reading. Moreover, from their responses, it seems that they are able to have an interactive approach to reading since in addition to emphasising aspects of reading such as background knowledge, they emphasise and mention the decoding processes (2 of them emphasise the importance of syntax and 3 of them focus on vocabulary).

The interesting point which comes up from the interviews is that no matter how proficient the subjects are, they do not mention the structure of the text or its genre as a help in reading. Only one of the high and one of the intermediate subjects mention it as important for efficient reading. It is also seen that vocabulary is viewed as crucial in reading process to all the subjects. When these students were asked about which tests had been more difficult for them, like some low proficiency ones, some of them expressed tests 2 and 4 to be easier due to their familiar subject matters (water cycle). Although their scores to syntax, semantics and register of the texts (appendix IX) reveal that test 4 was the most difficult one and also there is an order of difficulty from tests 1-4, only some of them say test 4 is the most problematic one. This makes generalisation difficult to make. A few of these as well as some intermediate subjects were not sure which test had been more difficult for them. However, there are some who state that test 1 was the easiest and 4, the most difficult test. For one of the students with the highest score in the proficiency test, there was no difference between the four tests. This probably happens because he is at such a high level of proficiency that he is familiar even with the language of incongruency in English.

As to the intermediate proficiency subjects, as the number of their responses in the above table shows, they appear to have a combination of all these strategies. In all, it seems that in using the strategies, they are nearer to

low proficiency students than to the high ones, namely in the use of top-down strategies they are not as good as high subjects and in the use of bottom-up strategies, they are not as poor as low proficiency subjects.

A comparison of the way the readers at different levels of proficiency view and approach reading process and the degree to which they are able to produce acceptable responses in syntax, semantics and register reveal that their scores are directly related to their orientation to the texts and passages. The same thing has been documented in Devine's study (1983). He researched on the relationship between the theoretical orientation of 20 students in an ESL program in Michigan and their oral reading performance. His instruments were an oral reading interview, an oral reading and a retelling of the oral reading. He found that the readers had internalised models of reading which could be expressed or "articulated" by them. He classified them as sound-centred, word-centred and meaning-centred. He also found that their internalised model of reading affected the type of the information (different cuing system) in the text they focused on and also their comprehension of the meaning of the text.

Devine's findings are further evidenced and expanded by the results of this part of the present study. It may be added that different parts of language on which the EFL subjects focus or regard as important in reading is directly related to their level of FL proficiency which in turn affects how much able they are to understand syntactic, semantic and register constraints of the text. Probably, this is the reason why the lower proficiency readers have produced less acceptable responses in the three categories under study than intermediate and high proficiency subjects and vice versa. This is also demonstrated by the results of the Anovas done on the data. So, the findings here regarding the qualitative analysis of the interviews confirm the results of the statistical analysis in the first part, ie. significant differences between the strategies different subjects display.

To summarise, the use of strategies in reading is different in the subjects at differing levels of proficiency. These interviews provide evidence about the use of top-down and bottom-up processing by these specific subjects. Using Devine's categories, low proficiency students are mostly sound and word-oriented. Most of them mention aspects of grammar and parts of speech as crucial in reading. Only a few of them seem to rely on top-down processing. In contrast, those students with a high level of proficiency are able to use their top-down processing (the use of background knowledge) and have an interactive approach to reading.

CHAPTER 7

CONCLUSIONS AND IMPLICATIONS

The general outcomes of this study can be summarised as:

1. The results of this study demonstrate that FL proficiency is significantly related and influences this group of Iranian students' ability to respond to the syntactic, semantic and register-based cues in the text. Based on the evidence in the present study, it appears that readers with a high level of proficiency in English have an interactive strategy of using their both bottom-up and top-down skills whereas low proficiency students are found to be less sensitive to contextual information in the text. However, the complexity of the reading process and that of the strategies used by the readers denote that there is more to FL reading than language proficiency of the readers.

2. Some evidence in this study is found to indicate that register complexity is a significant part of text difficulty and it significantly influences the use of syntactic, semantic and register-based cues in the text. Register complexity causes difficulty for all readers no matter at what level of proficiency they are.

3. Although the existence of an interaction between FL proficiency and register complexity of the text is not statistically proven, the scores of the subjects provide evidence that such an interaction exists. Syntactic,

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semantic and register-based acceptable scores obtained by the subjects at different levels of proficiency differ across complexity levels.

4. My own experience in teaching these EFL university students as well as what is born out by the results of this study indicate that there is a "linguistic threshold", below which the readers are not able to interact adequately with the text as well. Low proficiency limits or "short-circuits" the use of good strategies in reading. But I would add that this ceiling is not only caused by limited knowledge of language and it has a bearing on the complexity of the text. Register complexity of the text affects the degree to which this ceiling limits comprehension of the readers. In fact, this effect changes across complexity levels. Therefore, as documented in this study, as well as some other studies, FL proficiency is a prerequisite for efficient and adequate reading process. In the case of low language proficiency, the readers cannot apply their top-down strategies in reading in the foreign language. Low proficiency subjects of this study are not able to interact with the text as much as those with a high proficiency. To be more specific, they do not produce as many acceptable responses in syntax, semantics and register as high proficiency ones. Consequently, SL/FL reading appears to need a certain amount of language proficiency by using which the readers can respond interactively.

5. The evidence gained in this study has shown that both FL proficiency and L1 reading ability contribute to FL reading and this contribution is also affected by the register complexity of the text. Moreover, it is found that L1 reading ability helps only those subjects who are at a high level of proficiency when certain conditions are met. Therefore, FL reading is dependent on the effects of FL proficiency, L1 reading ability and register complexity of the text. Consequently, as documented in other studies, FL reading can both be a language and a reading problem.

6. As to the relative importance of the above variables (factors), the picture that emerged in this study as well as those of Bossers (1991), Chiramani (1992) and Hacquebord (1989), indicates that FL proficiency is much more important. The only exception to this generalisation is Carrell's study in which for Spanish L1 group, L1 reading was more significant. For justifications on her results refer to page 214, the chapter of discussion. Further, the fact that FL proficiency influences FL/SL reading is not necessarily the case with only low proficiency readers, rather it is related to FL reading even in high proficiency readers who are supposed to be able to use higher level comprehension strategies.

7. Low proficiency Iranian students can read the spoken register but not written register of the language. Even higher proficiency readers have problem with the written register of language. Although they have a mastery of language, they have not adequately learned different ways of interpreting meaning. In their self reports, most of them admit that vocabulary is crucial in comprehending the text, but it is shown that incongruency in the language of written mode is a major source of difficulty for them.

8. While readability formulae consider just the form of the language as a source of difficulty, analysis of the text based on systemic functional grammar is a better alternative for assessing the difficulty of the text. According to systemicists, form is not understood without taking its function into consideration, ie. we can get a better look at form when we look at its functional meaning.

All these conclusions have some theoretical implications in the research about reading. Regarding the question of whether FL reading is a language or a reading problem, the results of this study supports Alderson's view (1984) that it seems that it is both language and reading problem but with strong evidence that it is more language problem. FL proficiency is closely related to FL reading ability and those with a low level of proficiency have some limitations in interacting effectively with the texts.

Their inefficient FL proficiency hinders them to make use of different cues in the text.

From the literature review and the outcomes of this study, it can be concluded that in the beginning of FL learning, FL proficiency is a more significant predictor of FL reading. Therefore, it can be claimed that due to the differences between L1 and FL reading which are caused by limited level of SL/FL proficiency, the problem is a language problem. It has previously been claimed that in advanced stages of SL reading, the readers have enough decoding skills to make them able to interact with the text successfully, so their problem is a reading one. But the results of this study as well as a few others show that even in advanced stages of acquiring SL reading, the need for adequate SL/FL proficiency is not diminished. More research in this area is needed in order to come to a better conclusion.

On the other hand, as implied by the role of automaticity in reading, the results here demonstrate that mother tongue strategies in reading will help only those Iranian students who are at a high level of proficiency. Therefore, they can pay more attention to higher level strategies such as topic knowledge in their process of interacting with the text. However, in the absence of this familiarity with the topic, even high level subjects can not use their good strategies learned in their mother tongue. It seems that the relationship between reading in the first language and foreign language is affected by background knowledge and also the register complexity of the text. To come to a conclusion, more research is needed on how these interactions happen. Obviously, finding this level of language, ie. the "linguistic threshold", can be very helpful for ESL and EFL teachers and course designers (refer to Laufer and Sim 1985 for more detail). But, according to Alderson (1984) and Cummins (1981a), the term threshold is not an absolute term and not easy to define.

With regard to determining the difficulty of the text, most readability formulae have focused on sentence length and vocabulary difficulty. Now,

we emphasise that register complexity must also be weighed in any attempt at determining text difficulty. An interactive view of reading must affect the definition of readability. This consists not only of text variables like sentence complexity and vocabulary but also of variables such as background knowledge about field, tenor and mode and also the familiarity of the reader to a specific topic which contribute to the difficulty of the text.

From the findings of different parts of this study, it is revealed that more general notions of literacy, which include register and genre provide a more adequate model of reading. In such a model, language is used as a whole and differences between the type of the language used in different contexts are accounted for. An awareness of an adequate model of reading and language will help teachers know how spoken and written form of language (mode), specialised and social relationships (tenor) and common sense and uncommon sense form of language (field) differ. Therefore, they will know which type of differences causes problem for their students and how to cope with them.

As to the assessment of the readers' performance, the evaluation of students' performance on cloze test has often been based on an incomplete model of language. It is not only the grammatical competence of the reader consisting of the traditional areas of phonology, syntax and semantics which must be taken into consideration but rather, the reader's competence in recognising functional variations of language and their ability to use them appropriately in different contexts are important factors. One of the implications of this study is that, based on systemic functional model of language, there should be an integration between the reader's use of grammatical resources and higher level processing skills like the use of semantics in relation to the register categories of field, tenor and mode. Focus on only syntax and semantics in evaluating cloze tests is a partial view of the linguistic resources the readers have access to in reading comprehension, considering only the lower level linguistic system. That is

why register analysis was performed on the responses to the cloze tests in this study.

PEDAGOGICAL IMPLICATIONS

The findings of this study suggest looking at reading as a complex and interactive process. This complexity necessitates an understanding of the need for more informed teachers who are responsible for facilitating learning reading for all the subjects, no matter at what level of proficiency they are. As shown in the model of reading developed in this study, reading is a complex process involving the interaction of many reader and text variables. As Eskey to the conclusion to the book, Research in Reading in a Second Language (1987) remarks, such a complex process

> can not be broken into a series of steps that the teacher can take into a classroom and teach. Like other cognitive functions, reading is one that the normal human brain is preprogrammed to master, but readers must acquire this useful ability for themselves. The teacher's role is to facilitate, not to control, that acquisition process. The teacher must eventually develop a sense of what can and can not be taught in reading classes and must learn to define the teaching role as one of creating conditions within which students can develop their inherent potential for becoming readers of a second language - each to the best of his or her abilities. (p. 189)

Iranian students need to read texts in their fields and they have to be equipped with necessary skills. The facilitation of this acquisition is the duty of the teachers. As Coady (1979) states, "the teacher's main function in reading instruction is to get the student to move in the right direction and provide timely and appropriate feed back" (p. 12).

The results of this study show the basic importance of FL proficiency for FL reading. Therefore, a course may be designed with the aim of the development of basic proficiency in English language. Although this study did not aim at determining the relative importance of either vocabulary or grammar to be emphasised in such instruction, some studies like those of Hacquebord (1989) and Chiramani (1992) followed this issue and came to the conclusion that SL/FL reading is strongly correlated with the knowledge of vocabulary while the correlation with grammar was lower. Accordingly, it seems that the comprehension of academic texts that are full of technical language and vocabulary requires the readers to acquire a large number of words in order to be able to interact with the text efficiently.

However, it is not only the acquisition of certain amount of vocabulary that can help FL/SL readers since there are many FL learners who know a lot of vocabulary in the FL but they can not read as well as they do in their first language. As Devine (1987) points out, the focus can be put on the instruction of linguistic knowledge, specially development of vocabulary. But vocabulary and grammar must not be taught in isolation. According to him:

> the teacher should provide a rich linguistic environment in which readers will be exposed to topically interesting and situationally appropriate language samples....The language would be learned , as much as possible, through reading, not as a prerequisite for reading.... [the teachers]should provide the students with texts which allow them [students] to encounter complete self-contained stories and articles. Texts of this type allow students, even at the beginning levels, to build understanding through the use of a variety of cues, both in the text and from their experience as readers and as language users. (p. 84)

Moreover, since it was shown in the follow up study of this thesis that those EFL students who focus on the meaning of the text as a whole are more successful in the use of cuing system in the text and as a result achieve more comprehension, teachers must be aware that developing such strategies that focus on the meaning of the whole text rather than only syntax and vocabulary helps the subjects a lot to become efficient readers. For more detail, refer to Renault (1981) and Clarke and Silberstein (1977).

In the case of the subjects of this study, as shown in appendix IX, all the subjects have displayed a greater sensitivity to syntax than to meaning and register. This indicates that, as explained in the introduction to the study, at all levels of English teaching and even in General English courses in the university the emphasis is on teaching grammar rather than meaning or register. As much as the necessity of the knowledge of grammar can not be denied, but there must be a recognition of the difference between the grammars we teach. One of the findings of this study is that the syntactic details of a spoken text differ from those of written text and this is the point that must be taken into consideration. Every register has its own specific vocabulary and grammar which should be taught in their own register. According to our models of language and reading, all the levels of language work together to help the reader extract the message of the text. So, this is not only grammar that helps them in doing so, rather all the variables acting together to make a text congruent or incongruent may have a role. Teaching only the basic grammar of language does not obviously make the subjects sensitive to the whole text and discourse constraints, making them only focus on the individual sentences. This is what has happened to most Iranian students due to the type of the instruction they have received.

As discussed in our model of reading, although EFL reading is not only the ability to decode the printed text, it is still a variable which is very significant in the process of reading. A minimum amount of language proficiency is at least necessary, although not sufficient to help the reader to

activate his/her abilities in other parts like background knowledge and also to overcome the complexities in the text. This is what the proponents of automaticity believe. To them, the readers must at least reach a level of automatic decoding abilities in order to be able to make an interaction between higher level skills and their language knowledge (Eskey 1988, Grabe 1986).

Considering language threshold and an awareness of all other factors which may affect this threshold help the reading teachers to decide about when and where to emphasise language instruction to help low proficiency subjects, and also when to start focusing the higher level strategies and teaching them for successful reading (Laufer and Sim 1985). Moreover, it helps decide about when and how to start working with different texts in terms of their complexity in register. Different decisions can be made by reading teachers regarding the instruction which is suitable for certain levels of readers in terms of their language ability, availability of background knowledge, etc., all of which contribute to becoming interactive readers. As discussed before, although this level of threshold seems difficult to determine, the teachers must help the readers to reach a level of language proficiency at which they can read well. However, the implication of the "short circuit hypothesis" is that in order not to have students who know the vocabulary and grammar of a text but are not able to comprehend it well, as Clarke suggests, "ESL reading teachers must emphasise both the *psycho* and *linguistic*" (1980, p. 207). Since both L1 reading ability and FL proficiency was proved to contribute to FL reading, both of them should be included in reading courses.

Moreover, since FL proficiency showed a more significant effect and actually it accounted for a greater proportion of the variance in the FL reading than did L1 reading, FL proficiency appears to be more important to address in FL reading pedagogy. In any way, both linguistic decoding and top-down processing skills are to be necessary for reconstruction of the

meaning of the text. According to Eskey (1987), a good teacher must be aware of whatever problem the readers may have in relation to any of these areas. In the case of Iranian students as well as other EFL students, it seems that more attention must be paid to language competence in the beginning stages and in working with advanced students, skills and strategies can be taught. Still, it depends on the teachers to decide on the basis of the students they have, when and how to start teaching reading skills and when to focus on developing language knowledge. But according to Clarke, it is not an easy dilemma. Considering the fact that language proficiency contributes more significantly to FL reading, the teachers must aim at developing a marginal language competence or decoding skill in the students (1979). They also have to use the appropriate level of linguistic complexity of the texts in their materials used for reading classroom in order to help or encourage an interaction between top-down higher level skills and bottom-up decoding skills.

The interactive model presented in this study shows the significance of both the reader and the text or that of the process and product. The reading teacher in a SL or FL context has to facilitate the interaction of the readers with the text. Swaffar (1988) explains how to do this:

> there is a four-fold task: 1) to activate reader
> schemata; 2) to guide students to awareness of text
> structure; 3) to assist in strategy development; and 4)
> to promote relaxed interaction between students and
> texts. Beyond these four functions, the teacher's
> problem is to choose tasks for different students'
> backgrounds and language competencies. (p. 139)

He later concludes that in order to get the meaning of the writer actively, the text must be used for the total language learning process by SL/FL readers. This process consists of 1) text-based comprehension, including new information, logical systems, another perspective and differences in meaning

in different cultures and 2) reader-based articulation of individual understanding of schema, details and various perspectives (1988).

An awareness of the interactive nature of reading, while many sources of knowledge contribute to a reader being a good or a poor one, together with the knowledge about various sources causing problem for students apparently help the reading teachers to overcome the problems they will have while teaching. Therefore, they should be able to make a combination of language skills and reading skills. In this relation, Richards (1989) points out, "An understanding of the differences between top-down and bottom-up processing and the role played by schemata and background knowledge in reading will lead the teachers to look for classroom strategies which encourage second-language readers to use an appropriate combination of top-down and bottom-up strategies when they approach a text" (p. 13). Refer to Carrell (1988b, 1988c) for an explanation of how to teach some strategies which help SL/FL readers become interactive readers.

According to Wallace (1992), the instructors must first "ensure that text, context, and reading task give maximum support to the SL learner's linguistic and schematic knowledge" (p. 43). She argues that, "It might be preferable to talk not of teaching specific skills but of developing strategies ....that assumes ...that reading is unitary processes which are not subdivided into constituent skills. Strategies involve ways of processing text which will vary with the nature of the text, the reader's purpose, and the context of situation" (p. 57). In this way, the reading teacher must support the reader's interpretation of a text by providing them with different kinds of information about context, ie. the immediate, institutional and wider social context of the text. They can help the readers to construct the context or the register of the text.

In addition to context, as Wallace (1992) points out, in order to make the reader interact efficiently with the text, the readers need to have access to the content of the text, ie. access to genre, topic and their typical

discourses which are determined by context, whether institutional or wider social context. To facilitate the reader's interaction with the text, she suggests pre-reading, while-reading and post-reading activities. (For further detail refer to Wallace 1992, part 2). So, both decoding skills and high level processing must be worked with them in the classroom. In this relation, Eskey (1986) argues that reading teachers must be concerned with two complementary reading skills: "1) simple identification skills, which mainly depends on the knowledge of the language, specifically, the language in its written form, and 2) the higher level cognitive skills required for the interpretation of texts, which mainly depend on knowledge of the subject matter of the texts...." (p. 9).

Laufer and Sim (1985) suggest, "the most pressing need of the FL readers is vocabulary, then the knowledge of subject matter, then the structure of paragraphs and sentences" (p. 42). And although most of the subjects of this study emphasise a need for knowing vocabulary in order to be able to interpret the text, the results of this study reveal that it is the register of the text which causes the most difficulty. Moreover, considering the functional model of language, different components of language can not be separated and taught. Therefore, the vocabulary and structure of the language must be learned in its own register and context. Since it is proved that the incongruency in the language contributes to the complexity of it and this is what causes difficulty for the readers, it is suggested that EFL teachers start from the congruent language and then gradually move to the incongruent language. In fact, in teaching reading written discourse, we should arrange language programs that address the metaphorical discourse. This will help them become literate and read and write metaphorical language. At first, they must be given the texts which are more congruent and then activities can be organised which help them learn how to unpack the language in order to simplify the language and as a result make it more comprehensible.

This problem has been raised by Cowan (1973) in that he states, the register of English with which Tehran university students are confronted is an extremely complex one and "the students' unfamiliarity with these patterns will severely restrict their ability to read at this level. If we are to provide them with the means to read scientific literature, we must systematically teach them the kind of linguistic cues that characterise it" (p. 132). Moreover, in teaching incongruent language, the students would be better get familiar with the ways of rewording the incongruent texts in order to make them more comprehensible.

As Halliday (1989) points out, "metaphor is a natural historical process in language and modes of expression involving different degrees of metaphor will always exist side by side. We can often take two or three or even more steps in rewording a grammatical metaphor in a less metaphorical, more congruent form...." (p. 27). The term which is used for rewording a text from a metaphorical realisation to a more congruent form is "unpacking". It means to show how an atypical realisation of language is more simply comprehended in a more typical form, ie. congruent form. In this way, the meaning will be more accessible to them. The following example taken from Ravelli (1985, p. 78) may suffice for the purpose of this study to show how a text can be reworded or unpacked to a congruent form:

Ex.1 S1:5) (a)   and we are <u>discussing</u> the impact of the

                      <u>palm Sunday march</u> [[that was <u>held last</u>

                      <u>year</u>]]

In this incongruent sentence grammatical intricacy is 1 and lexical density is 7, both characterising a written mode of language. It can be unpacked to:

        (b):   α   and we are discussing how (people)

                      affected (politicians) when (people)

                      marched on <u>palm Sunday last year</u>

Here, the grammatical intricacy is 5 and lexical density is reduced to 2.7. As a spoken form of language, it would be apparently easier to comprehend than the incongruent form above.

What is implied from this is that the complexity of different forms of language differ. FL readers need to acquire skills that enable them to derive the meaning of texts with different levels of difficulty. In terms of grammatical metaphor, after teaching the typical realisation of meanings, the students need to be helped in learning that the same meanings can be realised in an atypical way. For example, a process which is usually realised as a verbal group can be realised as a thing, ie. a participant. So, after learning the typical, congruent language, it will apparently be easier for them to understand the metaphorical language. In other words, when they have a complete understanding of the content in a congruent language, they can gradually move towards the written mode. This is in the same line with systemic functional model of language in which language development is a process of learning meaning and the language learner is always expanding the choices in the linguistic system. Therefore, the readers can at least be aware of the differences between spoken and written forms of language, without any need for knowing the terminology. As Williams (1993) concludes:

> given the centrality of language to learning, it would not be surprising to find that careful description of how linguistic meaning 'work' is required for progress to be made in overcoming some of the learning difficulties created by current practices. What systemic functional grammar seems to offer is precisely a sensitivity to technique, refusing global analysis of learning potential and learning difficulties and focusing attention on semantically important patterns of interaction in order to make learning accessible to many to whom it would otherwise be denied. (p. 252)

Further, as far as the contribution of this study to the threshold question is concerned, the results of this study suggest that systemic functional grammar offers more adequate tools for the analysis of higher level processes. It could be a means for the EFL teachers to be aware of the relationship between text, reader and its social and cultural context. Such a linguistic framework contributes to the way the teachers look at the process through which the readers go during their encounter with the texts. An awareness of this type of grammar helps the teachers to analyse the language they are to teach and in this way help their students understand how structure of the language is directly related to context. Moreover, it makes it possible to interpret the difficulties the EFL readers might have in the process of learning reading. The teachers can also apply linguistic analysis of the text based on systemic functional grammar for diagnostic uses. As explained in the previous sections, texts vary in their differences in mode based on which they represent different levels of complexity or abstraction. The texts containing high lexical density, complex nominal groups and grammatical metaphor are more complex and as a result cause problem for the readers. If the teachers are aware of these text variables that cause difficulty for the readers, they know better how to choose appropriate materials for instruction. Readers' sensitivity to these variables must be increased by the teachers as a help to their use of effective strategies in their encounter to each type of the texts, whether congruent or incongruent.

Our students in the universities need to become efficient in getting information from the written texts. They are required to handle different texts at different levels of incongruency. Therefore, they have to know how written mode differs from spoken mode of language in order to be able to get sufficient information from the texts they read. They must at least be familiar with the differences between the two modes of language. As Hammond (1990) points out about children learning their first language, (and we can suppose that it will be true with EFL learners), learning about

differences between spoken and written form of language is an important part of becoming literate. They need to know how the lexical density of a text is achieved, how in written form of the language, the meaning is arranged in less clauses than spoken form, how spoken form is more grammatically intricate, how written form contain more complex nominal groups, and finally, how different forms of grammatical metaphors are used in texts with different modes. They must be equipped with the knowledge to unpack the incongruent language. According to Hammond (1990), "if students do not develop effective control of the features of written mode... their chances of academic success are minimal" (p. 43). It seems that what is needed for them, as Christie (1989) suggests for children learning their first language, is that the teachers offer "good models of the written mode in carefully selected books" (p. 55), in order to help them become literate in reading their specialised textbooks.

After his experience with Iranian university students, Cowan (1973) lists the major problems of these students in reading English. He concludes that "the greatest assistance in selecting teaching points for a reading program must come from the register analysis" (p. 138). What he suggests is that, "rather than devote a block of lessons to the teaching of one major syntactic process, say nominalisation processes, we might discover...that different types of nominalisation should be sequenced in among the different types of relativisation processes, since scientific prose often contains relative clauses with one kind of nominalisation" (p. 139).

This need has also been revealed in other ESL or EFL students than Iranians. As Cohen, et al (1979) state, Israeli students as non-native speakers of English have problems in handling their English textbooks. He found that their problem is not technical vocabulary of the text but it is the way scientific language is written, ie. the use of heavy noun phrase subjects and objects, syntactic markers of cohesion and so on. In order to help solve this problem, he suggests what is needed is an exact analysis of those

confusing grammatical patterns in the text like objects or subjects consisting of heavy noun phrase. Now that we have ascertained that register complexity is one of the causes of difficulty in reading for EFL subjects, instead of preparing simplified texts, we should help them cope with these difficulties. This needs to be considered by teachers and course designers. The texts must be chosen in such a way that they maximise the readers' interaction with the texts. However, it does not mean that we must avoid using incongruent texts. It means that the teachers must provide them with the means to overcome their text-related problems and make the text more accessible to them. They must be given practice in seeing how texts which are complex in register can be unpacked. The textbooks should be selected with care, taking their congruency and incongruency into consideration. As explained earlier, passages with a congruent mode are better chosen first since they will be easier for the readers to understand. This will contribute to building up a confidence on the part of the readers so that they make sure that they are able to handle the difficulties in reading. Later, a move toward more incongruent texts seem reasonable. Furthermore, it will help increase the readers' interest in reading. In sum, following the recommendations of this part will hopefully help our EFL students become efficient readers in their encounters with the texts.

FURTHER RESEARCH

The specific subject of this study requires more research to be done in this area. Further research is suggested to be done in the following areas:

1) The present study's focus has been on medicine and related university subjects at Shiraz university in Iran only. Like any other empirical research, the findings of this study can not be taken as definitive since it is done on a certain sample with a specific major at a certain university having a specific language as the mother tongue. More research

is required to be conducted on the subjects studying other majors in different universities or even high school students at different stages of the acquisition of SL/FL. If all these factors are systematically changed, more evidence may come up concerning the results of this study.

2) More research is called for using an intra-individual, cross-linguistic and more importantly longitudinal design in order to add to our knowledge about the factors involved in reading comprehension in a SL/FL.

3) More research on the role of register complexity on FL reading is called for. Our finding about the effect of text complexity on reading comprehension would find more support if similar results were found in future research. Such studies can test students with first languages other than Farsi by using instruments other than cloze. Due to the complexity of reading process, different testing approaches have to be investigated to help come to a better understanding of the process. In that case, important decisions can be made for teaching reading in SL/FL contexts.

4) Systemic functional grammar criteria for the linguistic analysis of the text should be included in more studies concerned with the effect of text complexity or difficulty. On the basis of this, texts with lower level of register complexity than test 1 and also with higher level of complexity than test 4 in this study must be included to see the extent to which this variable affects FL reading.

5) The content of the texts used in this study were matched two by two. Therefore, a partial control of the subject matter has been done on the texts. It is suggested that in further research, the topic of all the texts at differing levels of complexity be around the same subject about which all the subjects have background knowledge. In that case, the interaction between reader's background knowledge and the topic of the text is better accounted for.

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APPENDIX I

Lexical Density and Grammatical Intricacy (Analysis of Tests 1-4)

_____ = lexical items

Frog

Congruent text 1

No. of words : 215

Lexical Items

1	1	In different seasons the temperature changes substantially	5
2	+2	and frogs cope in several ways.	3
3	α	Our bodies can keep warm	3
4	xβ	even when the weather is comparatively cold.	4
5	.	But it is more difficult for a frog or a toad.	4
6	xβ	If it is cold outside	3
7	α	he gets just as cold.	2
8	xβ	If it is hot	2
9	α	he gets hot too.	2
10	α	So he moves about from sunshine into shade	3
11	xβ	to keep his body at just the right temperature.	4

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12	1	In some <u>countries</u> the <u>winter</u> <u>is</u> too <u>cold</u> for <u>frogs</u>	
		and <u>toads</u>	6
13	x2	so in the <u>autumn</u> they <u>find</u> <u>sheltered</u> <u>places</u> under	
		the <u>grounds</u>, in <u>cellars</u>, or in the <u>mud</u> at the	
		<u>bottom</u> of <u>streams</u>. 9	

14	1	here they <u>hibernate</u> 1
15	=2xβ	without <u>feeding</u> and hardly <u>breathing</u> at all.....................2
16	2 α	they <u>sleep</u> <u>soundly</u> right through the <u>winter</u>. 3

| 17 | | In the <u>spring</u> they all <u>emerge</u> into the <u>open</u> again..............3 |

18	1	They <u>are</u> <u>thin</u> 2
19	x2	so they <u>feed</u> a lot 1
20	+3	and they <u>warm</u> themselves in the <u>sun</u>....................2

21	α	Then they <u>find</u> their <u>way</u> <u>back</u> to the <u>ponds</u> and	
		<u>streams</u> 5
22	β 1	to <u>mate</u>.................................1
23	2	and <u>lay</u> their <u>eggs</u>.................................2

24	1	For a time they <u>float</u> and <u>swim</u> in the <u>water</u>.................3
25	2 α	or <u>sit</u> about in the <u>sun</u> 2
26	2x β	<u>croaking</u> <u>raucously</u> 2

| 27 | | Then they <u>pair</u> ....1 |

| 28 | | Each <u>female</u> <u>carries</u> eggs in her <u>body</u>....................4 |

29 xβ   Then when she <u>pushes</u> her <u>eggs</u> out into the

          <u>water</u>, ...3

30   α   the <u>male</u> <u>covers</u> them with a <u>liquid</u> from his

          own <u>body</u> 4

31 =β   which <u>fertilises</u> them 1

No. of intricacy of each clause complex: 47

No. of clause complexes: 15

Intricacy: 3.13

No. of lexical items: 92

No. of ranking clauses: 31

Lexical Density: 2.96

Steaming and Freezing

congruent text 2

no. of words   170

Lexical Items

1	α	If you <u>leave</u> <u>water</u> in a <u>saucer</u> for a while	3
2	xβ	it <u>evaporates</u>	1
3	1	It <u>changes</u> into <u>vapour</u>	2
4	+2	and <u>becomes</u> <u>invisible</u>	2
5	α	<u>Water</u> <u>changes</u> into <u>vapour</u> much more <u>rapidly</u>	4
6	xβ	when it is <u>boiled</u>	1
7	αI	It <u>boils</u>	1
8	xβ	when the <u>temperature</u> <u>reaches</u> <u>100</u> <u>degrees</u> <u>C</u>	5
9	xβ	When it <u>boils</u>	1
10	α	you <u>see</u> <u>bubbles</u> of <u>vapour</u> <u>forming</u> and <u>bursting</u> out into the <u>air</u>	6
11		You also <u>see</u> <u>steam</u> <u>rising</u>	3
12		<u>Steam</u> <u>is</u> a <u>cloud</u> of <u>tiny</u> <u>droplets</u> of <u>water</u>	6
13	α	The <u>droplets</u> <u>form</u>	2
14	xβ1	when the <u>hot</u> <u>vapour</u> <u>hits</u> the <u>cold</u> <u>air</u>	5
15	+2	and <u>changes</u> back into <u>water</u>	2

16 α   Water vapour in the air condenses to liquid water...............6

17 xβ   when it comes up against a cold surface 3

18 1   Observe how the kitchen windows get steamed up

          on a cold day..7

19 +2   and start running with water.. 3

20   This is the water that was once in the saucepan on

          the cooker 5

21   On really cold days, you may find solid water on the

          windows in the form of ice 8

22   1 Water freezes...2

23 α=2 or changes into ice..2

24 xβ   when its temperature decreases to 0 degrees C 5

25 xβ   When water freezes 2

26 α   it expands 1

27 xβ   as it hardens...1

No. of intricacy of each clause complex . 40

No. of clause complexes 14

Intricacy.. 2.85

No. of lexical items 89

No. of ranking clauses............................. 27

Lexical Density....................................... 3.29

Adaptation and Hibernation

incongruent text 1

no. of words : 207

Lexical items

1 1 α All <u>living</u> <u>things</u> <u>need</u> <u>certain</u> <u>conditions</u> 5

2 1 xβ to <u>survive</u>...1

3 +2 and each <u>species</u>, or <u>different</u> <u>kind</u> of <u>plant</u> or

creature, is <u>better suited</u> to some <u>conditions</u>

than to <u>others</u> 8

4 1 <u>Water</u> <u>lilies</u> <u>are</u> <u>well adapted</u> to <u>living</u> with <u>roots</u>

in very <u>wet</u> <u>conditions</u>   8

5 +2 but most <u>gum</u> <u>trees</u>, for <u>example</u>, <u>are not</u> 4

6 +3 α and will <u>die</u>..1

7 3xβ if their <u>roots</u> <u>are</u> too <u>wet</u> 3

8 α Most <u>snakes</u>, for <u>example</u>, <u>operate</u> <u>better</u> in <u>hot</u>

or <u>warm</u> <u>climate</u>   7

9 xβ because they can not <u>make</u> their own <u>body</u> <u>warmth</u>.............3

10 xα as we can 0

11 In a <u>cold</u> <u>climate</u> <u>snakes</u> can not <u>move</u> <u>quickly</u> enough

to <u>catch</u> their <u>prey</u> 7

12   It <u>is</u> for this <u>reason</u> that <u>snakes</u> <u>generally</u> <u>hibernate</u>

            in <u>winter</u> in <u>southern</u> <u>Australia</u> 8

13   1   <u>Hibernation</u> <u>is</u> a kind of <u>sleep</u>, during which the

            <u>animal</u> <u>lives</u> on <u>food</u> <u>stored</u> in its <u>body</u> <u>fat</u> 9

14   +2   and does not <u>move</u> about 1

15   <u>Hibernation</u> <u>is</u> one <u>way</u> in which <u>snakes</u> have

            <u>adapted</u> to <u>winter</u> 6

16   1   Some <u>animals</u> do not <u>migrate</u> 2

17   +2   but <u>go to sleep</u> during <u>colder</u> <u>months</u> 3

18   This is <u>called</u> <u>hibernation</u> 2

19   α   It <u>is</u> <u>different</u> from <u>ordinary</u> <u>sleep</u> 4

20   xβ   because all the <u>animal's</u> <u>body</u> <u>functions</u>, its

            <u>metabolism</u>, <u>slow down</u> almost to a <u>stop</u> 6

21   <u>Metabolism</u> <u>includes</u> all the <u>normal</u> <u>life</u> <u>processes</u>

            of the <u>body</u>, <u>breathing</u> and <u>circulation</u> of the

            <u>blood</u>, <u>taking in</u> and <u>digestion</u> of <u>food</u>, and

            and the <u>passing out</u> of the <u>waste</u> <u>products</u> 15

No. of intricacy of each clause complex . 31

No. of clause complexes 11

Intricacy.. 2.81

No. of lexical items	103
No. of ranking clauses	21
Lexical Density	4.9

Water Cycle

incongruent 2

No. of words : 159

1   Water in the atmosphere is in a state of

           continual change 6

2   Water evaporated from open water surfaces, from

                   pools on the ground surface or from water

                   contained within the earth's surface materials

                   is introduced into the atmosphere as water

                   vapour 17

3   1   Atmospheric water vapour is carried high up by

                   vertical air currents 7

4   +2 and redistributed horizontally by winds and turbulence

                   operating over a wide range of scales 8

5   1   Some of this water vapour will finally condense

                   in the form of clouds.................................... 6

6   +2 and some of these clouds will eventually precipitate

                   out some of their contents as rainfall or other

                   types of precipitation 7

7   It is at this stage that the cycle is complete 4

8   α   Water is returned to earth.. 3

9   xβ1   to <u>contribute</u> <u>directly</u> or <u>indirectly</u> to <u>surface</u> and

            <u>subsurface</u> <u>water</u> <u>storage</u> and <u>flow</u>.............................8

10   +2   and <u>finally</u> <u>drain</u> into the <u>major</u> <u>lakes,</u> <u>seas</u> and <u>oceans</u> 6

11   Further <u>evaporation</u> from these <u>surfaces</u> can <u>serve</u> to

            <u>provide</u> <u>atmospheric</u> <u>water</u> <u>vapour</u>............................7

12   The most <u>important</u> <u>elements</u> of the <u>hydrological</u>

            <u>cycle</u> then <u>are</u> <u>precipitation</u> and <u>evaporation</u> 7

            No. of intricacy of each clause complex . 16
            No. of clause complexes 8
            Intricacy... 2

            No. of lexical items 86
            No. of ranking clauses............................. 12
            Lexical Density.. 7.16

Complex Nominal Groups & Grammatical Metaphor (Analysis of Tests 1-4)

___ = grammatical metaphor

----- = complex nominal group

Frog

congruent 1

                                                         No. Type

No.		No.	Type
1	In different seasons the temperature changes substantially		
2	and frogs cope in several ways.		
3	Our bodies can keep warm		
4	even when the weather is comparatively cold	1	3b
5	But it is more difficult for a frog or a toad.		
6	If it is cold outside		
7	he gets just as cold.		
8	If it is hot		
9	he gets hot too.		
10	So he moves about from sunshine into shade		
11	to keep his body at just the right temperature.		
12	In some countries the winter is too cold for frogs and toads		
13	so in the autumn they find sheltered places under the	1	2

           ----

           grounds, in cellars, and in the mud at the bottom

           ---------   ---------

of streams.

----

14   Here they hibernate

15   without feeding and hardly breathing at all

16   they sleep soundly right through the winter.

17   In the spring they all emerge into the open again.

18   They are thin

19   so they feed a lot

20   and they warm themselves in the sun.

21   Then they find their way back to the ponds and streams

22   to mate

23   and lay their eggs.

24   For a time they float and swim in the water

25   or sit about in the sun

26   croaking raucously.

27   Then they pair.

28   Each female carries eggs in her body

29   then when she pushes her eggs out into the water

30   the male covers them with a liquid from his own body

----

31   which fertilises them.

Sum of the complex nominal structures:. 3

No. of ranking clauses............................. 31

Nominal Group Structure:........................ 0.09

Instances of metaphor.............................. 2

No. of clauses.. 15

Grammatical Metaphor   0.13

Steaming & Freezing

congruent 2

                                                                No. Type

1   If you leave water in a saucer for a while

2   it evaporates.

3   It changes into vapour

4   and becomes invisible.

5   Water changes into vapour much more rapidly

6   when it is boiled.

7   It boils

8   when the temperature reaches 100 degrees C.

9   When it boils

10   you see [bubbles of vapour forming and bursting 1 8a

             ----

             out into the air].

11   You also see [steam rising]...1 8a

12   Steam is a cloud of tiny droplets of water.

             ----

13   The droplets form

14   when the hot vapour hits the cold air

15   and changes back into water.

16   Water vapour [in the air] condenses to

             ----

             liquid water 1 8a

17   when it comes up against a cold surface.

18   Observe [how the kitchen windows get steamed up

                                      308

18a | on a cold day] 1 8a

19 | and start running with water.

20 | This is the water [that was once in the saucepan

on the cooker] 1 8a

21 | On really cold days you may find solid water on

the windows in the form of ice.

22 | Water freezes

23 | or changes into ice

24 | when its temperature decreases to 0 degrees C.

25 | When water freezes

26 | it expands

27 | as it hardens.

Sum of complex nominal structures 7

No. of ranking clauses 27

Complex Nominal Groups 0.25

Instances of metaphor 5

No. of clauses 14

Grammatical Metaphor   0.35

Adaptation & Hibernation

incongruent 1

		No.	Type

1   All <u>living</u> things need certain conditions   1   2

2   to survive

3   and each species, or different kinds of

          ----

          plant or creature, is better suited to

          ----

          some conditions than to others.

4   Water lilies are well adapted to living with

          ----

          their roots in very wet conditions

5   but most gum trees, for example, are not

          ----

6   and will die

7   if their roots are too wet.

8   Most snakes , for example, operate better in warm

          or hot climate

9   because they can not make their own body <u>warmth</u> 1 3a

          ----

10   as we can.

11   In a cold climate snakes can not move quickly

          enough to catch their prey.

12   It is for this <u>reason</u> that snakes generally hibernate

          in winter in southern Australia... 1 5a

13   <u>Hibernation</u> is a kind of <u>sleep</u> [<u>during which</u> the........................... 3 1a,1a,8a

          ----

animal lives on food stored in its body fat]...........................1 8a

----

----

14   and does not move about.

15   Hibernation is one way [in which snakes have adapted

----

to winter]. 2 1a,8a

----

16   Some animals do not migrate

17   but go to sleep during colder months.

18   This is called hibernation..1 1a

19   It is different from ordinary sleep...............................1 1a

20   because all the animal's body functions, its.................1 1a

----

metabolism slow down almost to a stop. 2 1a,1a

----

21   Metabolism includes all the normal life processes   2 1a,1a

----

of the body, breathing and circulation of the 2 1e,1a

-----------   --------------------

blood, taking in and digestion of food, and the....................2 1a,1a

-------   --------------------   ---

passing out of the waste products.......................................3 1a,2,1a

----

Sum of complex nominal structures........ 13

No. of ranking clauses............................. 21

Nominal Group Structure......................... 0.61

Instances of metaphor.............................. 23

No. of clauses... 11

Grammatical Metaphor 2.09

Water Cycle

incongruent 2

	No. Type

1   Water in the atmosphere is in a state of 1 8a

        ----

            continual change 2 2,1a

            ----

2   Water evaporated from open water surfaces 1 8a

        ----

            from pools on the ground surface or 1 8a

                ----

            from water contained within the earth's 1 8a

                ----

            surface materials is introduced into the

            ----

            atmosphere as water vapour

            ----

3   Atmospheric water vapour is carried high up 1 7a

        ----

            by vertical air currents

            ----

4   and redistributed horizontally by winds and

            turbulence operating over a wide range 2 3a,8a

            _____

            ----

            of scales

5   Some of this water vapour will finally condense

----

     in the form of clouds

     ----

6   and some of these clouds will eventually precipitate

     ----

         out some of their contents as <u>rainfall</u> or 1 1a

         ----

         other types of <u>precipitation</u>...1 1a

     ----

7   It is at this stage that the cycle is complete

8   Water is returned to earth

9   to contribute directly or indirectly to surface

             ----

         and subsurface water <u>storage</u> and <u>flow</u> 2 1a,1a

     ----

10   and finally drain into the major lakes, seas and

         ----

         oceans

         ------

11   Further <u>evaporation from these surfaces</u> can serve........................2 1a,8a

             _____

     ----

         to provide <u>atmospheric</u> water vapour....................................1 7a

         ----

12   The most important elements of the <u>hydrological</u> 1 7a

     ----

         cycle are then <u>precipitation</u> and <u>evaporation</u>   2 1a,1a

         -----

Sum of complex nominal structures........ 19

No. of ranking clauses............................. 12

Complex Nominal Groups 1.58

Instances of metaphor.............................. 19

No. of clauses 8

Grammatical intricacy 2.37

APPENDIX III

Grammatical Metaphors Counted

No	Semantic Choice	Metaphorical Realisation Function/Class	Congruent realisation Class
1a	material process	thing nominal group	verbal group
1b	mental process	thing / nominal group	verbal group
1c	relational process	thing / nominal group	verbal group
1d	verbal process	thing / nominal group	verbal group
1e	behavioural process	thing / nominal group	verbal group
2	process	epithet,classifier/adjective	verbal group
3a	quality of a thing	thing / nominal group	adjective
3b	quality of a process	epithet,classifier/adjective	adverb
3c	quality of a process	hing / nominal group	adverb
4a	modality	epithet / adjective	(modal) adverb
4b	modality,modulation	thing / nominal group	adjective, passive verb
5a	logical connection	thing / nominal group	conjunction
5b	logical connection	process / verbal group	conjunction
6	circumstance	process / verbal group	prepositional phrase
7a	participant	classifier / adjective	nominal group
8a	expansion	act, clause / clause	ranking clause
8b	projection	fact / embedded clause	ranking clause
9	circumstance	epithet,classifier/adjective	prepositional clause

APPENDIX IV

Burke Reading Interview

Interview Questions

1. When you are reading and you come to something you don't know, what do you do? Do you ever do anything else?

2. Do you think that (ask teacher's name) is a good reader? Who is a good reader that you know?

3. What makes him/her a good reader?

4. Do you think s/he ever comes to something s/he doesn't know when s/he is reading?

5. IF YES: When s/he does come to something s/he doesn't know, what do you think s/he does about it?

    IF NO: Suppose s/he does come to something s/he doesn't know.

            Pretend: what do you think s/he does about it?

6. If you knew that someone was having difficulty reading, how would you help him?

7. What would (a/your) teacher would do to help that person?

8. How did you learn to read? What did (they/you) do to help you learn?

9. What would you like to do better as a reader?

10. Do you think that you are a good reader?

My own questions regarding how they decided about their different acceptable and unacceptable responses in both English and Farsi cloze tests were added to this scale.

APPENDIX V

Clarke and Burdell (1977) Scales for Evaluating Syntactic and Semantic Acceptability. (unacceptable responses are underlined and the acceptable ones are in brackets):

Syntactic Acceptability (SYNAC)

4: totally acceptable

I stayed a week in a hotel by the sea

(spent)

3: acceptable in the sentence; the response satisfies sentence level constraints, but violates discourse constraints.

After eating lunch I usually sleep for an hour

(would)

(The passage requires the past tense)

2: acceptable only with the following portion of the sentence; from the response on, the sentence is syntactically acceptable.

The hotel food were very good.

(Was)

1: acceptable only with the preceding portion of the sentence; the sentence is syntactically acceptable up to and including the response.

Sometimes our sister ride in it, too.

(Sisters)

0: totally unacceptable

It (the food) was so good that I fat too much during my visit.

(ate)

Semantic Acceptability (SEMAC)

6: totally acceptable

    I just wrote a <u>hotel</u> asking for a room in August.

           (letter)

5: totally acceptable if minor syntactic constraints are ignored; the sentence

    and/or the response requires minor syntactic changes.

    It seldom rains and it <u>doesn't</u> snows.

           (never)

4: acceptable in the sentence; the response violates passage-level meaning

    constraints.

    And all this (the hotel accommodation) was <u>very</u> expensive.

           (not)

3: acceptable in the sentence if syntactic constraints are ignored; the

    sentence and/or the response requires minor syntactic changes to

    become acceptable at the sentence level.

    Even on Saturdays and Sundays she <u>don't</u> work

           (must)

2: acceptable only with the following portion of the sentence; from the

    response on, the sentence is semantically acceptable.

    At 12.00 I usually <u>speak</u> lunch with friends.

           (ate)

1: acceptable only with the preceding portion of the sentence; the sentence

    is semantically acceptable up to and including the response.

After eating <u>there</u> big breakfast, I spent the morning swimming.

        (a)

0: totally unacceptable.

  The weather is wonderful <u>blue</u>.

              (there)

9: doubtful; the response seems to fit the context, but it is impossible to
    determine the contextual motivation for it.

  It (the food) was so good that I <u>fat</u> too much during my visit.

              (ate)

              (Clarke and Burdell, 1977: 135-136)

CLOZE TEST NO. 1

Fill in the blanks with an appropriate word. Each blank needs only one word. Write the words in the spaces provided.

In different seasons, the temperature changes substantially and frogs cope in several ways. Our bodies can keep warm even when the weather is comparatively cold. But it is more difficult for ------------(1) frog or a toad. If it -----------(2) cold outside, he gets just as ------------(3). If it is hot, he gets ------------(4) too. So he moves about from ------------(5) into shade to keep his body ------------(6) just the right temperature.

In some ------------(7) the winter is too cold for ------------(8) and toads; so in the autumn ------------(9) find sheltered places under the ------------(10), in cellars, or at the bottom ------------(11) streams. Here they hibernate: without feeding ------------(12) hardly breathing at all, they sleep soundly ------------(13) through the winter. In the ------------(14) they all emerge into the ------------(15) again. They are thin, so they feed a ----------(16) and they warm themselves in the ------------(17). Then they find their way back to ------------(18) ponds and streams to mate and ------------(19) their eggs.

For a time they float and ------------(20) in the water, or ------------(21) about in the sun, croaking raucously. ------------(22) they pair. Each female carries eggs in her ------------(23). Then when she pushes her --------(24) out into the water, he covers------------(25) with a liquid from his own body, which will fertilise them.

CLOZE TEST NO. 2

Fill in the blanks with an appropriate word. Each blank needs only one word. Write the words in the spaces provided.

If you leave water in a saucer for a while, it evaporates. It changes into vapour and becomes invisible. Water changes into vapour much ------------ (1) rapidly when it is boiled. It boils -----------(2) the temperature reaches 100 degrees C. When -----------(3) boils, you see bubbles of vapour ------------(4) and bursting out into the air. ------------(5) also see steam rising. Steam is ------------(6) cloud of tiny droplets of water. ------------(7) droplets form when the hot vapour ------------(8) the cold air and changes back ------------(9) water.

Water vapour in the ------------(10) condenses to liquid water when it comes ------------(11) against a cold surface. Observe how the ------------ (12) windows get steamed up on a cold ------------(13) and start running with water. ------------(14) is the water that was once in the ------------(15) on the cooker. On really cold ------------(16), you may find solid water on the ------------(17), in the form of ice.

Water ------------(18) , or changes into ice, when its ------------(19) decreases to 0 degrees C. When ------------(20) freezes, it expands as it hardens.

CLOZE TEST NO. 3

Fill in the blanks with an appropriate word. Each blank needs only one word. Write the words in the spaces provided.

All living things need certain conditions to survive and each species, or different kind of plant or creature, is better suited to some conditions than to others. Water Lilies are well adapted to ------------(1) with their roots in very wet

------------(2) but most gum trees , for example, ------------(3) not and will die if their ------------(4) are too wet.

Most snakes, for example, ------------(5) better in warm or hot------------(6) because they cannot make their own ------------(7) warmth as we can. In a ------------(8) climate, snakes cannot move quickly enough to ------------(9) their prey. It is for this ------------(10) that snakes generally hibernate in winter ------------(11) southern Australia. Hibernation is a kind of ----------
--(12), during which the animal lives on ------------(13) stored in its body fat and------------(14) not move about. Hibernation is one------------(15) in which snakes have ------------(16) to winter.
Some animals do not migrate, but ------------(17) to sleep during the colder months. This is ------------(18) hibernation. It is different from ------------
(19) sleep because all the animal's ------------(20) functions, its metabolism, slow down almost to a ------------(21). Metabolism includes all the normal life ------------(22) of the body, breathing and circulation of the ------------(23), taking in and digestion of food, ------------(24) the passing out of waste products.

CLOZE TEST NO. 4

Fill in the blanks with an appropriate word. each blank needs only one word. Write the words in the spaces provided.

Water in the atmosphere is in a state of continual change. Water evaporated from open water surfaces, ------------(1) pools on the ground surface or from ------------(2) contained within the earth's surface materials ------------(3) introduced into the atmosphere as water ------------(4). Atmospheric water vapour is carried high ------------(5) by vertical air currents and ------------(6) horizontally by winds and turbulence operating over ------------(7) wide range of scales. Some of ------------(8) water vapour will finally condense in the ------------(9) of clouds and some of these ------------(10) will eventually precipitate out some of ------------(11) contents as rainfall or other types of ------------(12). It is at this stage ------------(13) the cycle is complete. Water ------------(14) to earth to contribute directly or ------------(15) to surface and subsurface water storage ------------(16) flow and finally drain into the major ------------(17), seas and oceans. Further evaporation from these ------------(18) can serve to provide atmospheric water ------------(19). The most important elements of the hydrological ------------(20) then are precipitation and evaporation.

Syntactic Acceptability of English Cloze Responses of Three Groups In Tests 1-4

	0	1	2	3	4
HIGH					
Test 1	7.1	4.3	1	1.1	86.2
test 2	8.6	5.5	1	1	83.6
Test 3	9.1	6.9	2.7	4.2	76.8
Test 4	12.9	10.7	5.7	4.2	66.3
INTERMEDIATE					
Test 1	21.6	6.6	1.6	2.4	67.8
Test 2	23.3	7.2	2.1	2.2	65
Test 3	26.3	9	3.9	4.9	55.7
Test 4	28.2	10.6	6.5	7	74.5
LOW					
Test 1	29.1	7.6	1.9	3.6	57.6
Test 2	31.8	8.6	1.7	1.5	56.2
Test 3	36.3	10.3	3.2	6.8	43.2
Test 4	40.2	10.9	5.3	6.5	36.9

APPENDIX VIII

Semantic Acceptability of English Cloze Responses of Three Groups in Tests 1-4

	0	1	2	3	4	5	6
HIGH							
Test 1	8.8	4.9	.94	.35	10.4	1.1	73.2
Test 2	9.8	6.3	.74	.15	11.9	1.3	69.7
Test 3	18.6	7.4	2.4	.61	21.6	4.5	49.6
Test 4	18.6	11.6	5.5	.15	13.5	4.8	45.5
INTERMEDIATE							
Test 1	24.3	6.6	1.8	.50	11.9	2.4	52.4
Test 2	24.5	8	1.8	.87	13.3	2.1	49.5
Test 3	31.4	9.4	3.7	.52	20.6	5.1	29
Test 4	35.7	10.8	6.2	1	11.8	6.3	27.8
LOW							
Test 1	34	7.8	.35	.27	11.9	4.3	40.1
Test 2	34.6	9.7	1.82	.45	11.7	1.7	39.8
Test 3	44.5	10.5	2.3	1.6	15.5	5.4	19.9
Test 4	42.2	11.7	5	.45	9	5.9	20.5

APPENDIX IX

Percentages of Syntactically and Semantically Acceptable and Register
Based Appropriate Responses of the Three Groups in Tests 1-4

		High	*Intermediate*	*Low*
	Syntax	86.4	67.8	57.6
TEST 1	Semantics	73.2	52.4	40.1
	Register	71.7	52	43.6
	Syntax	83.6	65	56.2
TEST 2	Semantics	69.7	49.5	39.8
	Register	72.3	55	42.7
	Syntax	76.8	55.7	43.2
TEST 3	Semantics	49.6	29	19.9
	Register	62.3	38	30.4
	Syntax	66.3	47.5	36.9
TEST 4	Semantics	45.5	27.8	20.5
	Register	40	25.5	20.4

APPENDIX X

Register Appropriacy of English Cloze Responses of the Three Groups in Tests 1-4

	1 Appropriate
HIGH	
Test 1	71.7
Test 2	72.3
Test 3	62.3
Test 4	40
INTERMEDIATE	
Test 1	52
Test 2	55
Test 3	38
Test 4	25
LOW	
Test 1	43.6
Test 2	42
Test 3	30.4
Test 4	20.4

APPENDIX XI

Subjects for Cloze Analysis: English Cloze Scores (Good L1 Readers)

	ID no.	Proficiency Scores	English Cloze Scores	English Cloze Rank
1	3	62	32	38
2	10	68.5	52	16
3	15	81.25	46	27
4	29	68.75	49	19
5	30	61	48	23
6	36	73	62	2
7	41	79.75	48	24
8	45	69	58	6
9	52	67.25	51	18
10	54	64.25	60	3
11	55	72	46	26
12	75	78.75	65	1
13	76	67	43	32
14	78	70.75	60	4
15	90	75.75	55	11
16	94	66	56	10
17	97	64.75	47	25
18	101	69.5	48	22
19	111	79	58	7
20	112	72	53	13
21	115	79.75	31	40

$m = 70.95$ $m = 50.8$

$R = 61-81.25$ $R = 31-65$

Poor L1 Readers

	ID no.	Proficiency Scores	English Cloze Scores	English Cloze Rank
1	4	59.75	34	37
2	7	81	57	8
3	11	61	29	41
4	13	61.5	52	15
5	14	80.75	54	12
6	25	82.5	45	28
7	27	68.75	40	35
8	32	61	23	42
9	38	61.25	57	9
10	46	63	32	39
11	56	62	44	31
12	58	69.5	48	20.5
13	79	59.75	45	29
14	81	73.5	52	17
15	84	66.25	59	5
16	86	70	42	34
17	96	59.25	38	36
18	102	70.25	44	30
19	106	82.25	53	14
20	110	60.5	48	20.5
21	118	68	43	33

m = 67.7   m = 44.6

R= 61-81   R= 32-57

APPENDIX XII

Subjects for Cloze Analysis: Farsi Cloze Scores (Good L1 Readers)

	ID no.	Proficiency Scores	Farsi Cloze Scores	Farsi Cloze Rank
1	3	62	50	17.5
2	10	68.5	57	1
3	15	81.25	50	17.5
4	29	68.75	52	10.5
5	30	61	54	4.5
6	36	73	52	10.5
7	41	79.75	52	10.5
8	45	69	50	17.5
9	52	67.25	52	10.5
10	54	64.25	54	4.5
11	55	72	52	10.5
12	75	78.75	56	2.5
13	76	67	49	20.5
14	78	70.75	52	10.5
1`5	90	75.75	51	14.5
16	94	66	50	17.5
17	97	64.75	56	2.5
18	101	69.5	51	14.5
19	111	79	53	6.5
20	112	72	49	20.5
21	115	79.75	53	6.5

$m = 70.95$ $m = 52$

$R = 61-81.2$ $R = 49-57$

Poor L1 Readers

	ID no.	Proficiency Scores	Farsi Cloze Scores	Farsi Cloze Rank
1	4	59.75	36	41
2	7	81	42	34
3	11	61	45	25.5
4	13	61.5	40	37.5
5	14	80.75	43	30
6	25	82.50	46	24
7	27	68.75	44	27.5
8	32	61	47	22.5
9	38	61.25	47	22.5
10	46	63	38	40
11	56	62	39	39
12	58	69.5	42	34
13	79	59.75	42	34
14	81	73.5	44	27.5
15	84	66.25	42	34
16	86	70	40	37.5
17	96	59.25	43	30
18	102	70.25	42	34
19	106	80.25	43	30
20	110	60.5	45	25.5
21	118	68	32	42

m = 67.70   m = 42

R= 61-81   R= 36-47

APPENDIX XIII

Syntactic Acceptability of English Cloze Responses of Good and Poor L1 Readers

	4 totally acceptable	3 acceptable in sentence	2 acceptable after	1 acceptable prior	0 not acceptable
TEST 1					
Good L1 Readers	68.5	2.4	1.7	6.4	20.7
Poor L1 Readers	62.8	3.4	1.1	6.2	26.2
TEST 2					
Good L1 Readers	66.9	2.8	2.3	6.9	20.9
Poor L1 Readers	59.5	1.4	1.4	7.8	29.7
TEST 3					
Good L1 Readers	56.7	3.7	5.1	8.9	25.4
Poor L1 Readers	49	6.3	2.1	8.7	33.7

TEST 4

Good L1 Readers	50	7.1	5.9	11.6	25
Poor L1 Readers	41.4	7.6	5.7	9.7	35.4

AVERAGE OF ENGLISH TESTS

Good L1 Readers	60.5	4	3.7	8.4	23
Poor L1 Readers	53.1	4.6	2.5	8.1	31.2

APPENDIX XIV

Semantic Acceptability of English Cloze Responses of Good and Poor L1 Readers

	6	5	4	3	2	1	0
	tot accep	accep w/error	accep in sen	accep in sen w/error	accep after	accep prior	not accep

TEST 1

Good L1 Readers	54	2.2	11.2	.57	2.1	6.4	22.8
Poor L1 Readers	48	3.2	10.6	.38	1.3	6.6	29.7

TEST 2

Good L1 Readers	51.9	2.6	11.9	.48	2.1	7.8	23.1
Poor L1 Readers	45.9	1.1	11.4	1.1	1.1	8.5	30.4

TEST 3

Good L1 Readers	29.1	4.3	21.6	.20	4.7	9.5	30.3
Poor L1 Readers	24.6	5.3	16.3	1.3	2.1	8.3	41.2

TEST 4

Good L1 Readers	29.5	7.8	13.1	.48	5.4	11.4	32.3
Poor L1 Readers	25.4	5.71	8.5	1.4	5.7	10.2	42.8

AVERAGE OF ENGLISH TESTS

Good L1 Readers	41.1	4.1	14.4	.43	3.5	8.7	27.1
Poor L1 Readers	35.9	3.8	11.8	1	2.5	8.4	36

APPENDIX XV

Register Appropriacy of English Cloze Responses of Good and Poor L1 Readers

	1
	Appropriate
Test 1	Good L1 Readers = 56
	Poor L1 Readers = 51
Test 2	Good L1 Readers = 56
	Poor L1 Readers = 49
Test 3	Good L1 Readers = 37
	Poor L1 Readers = 31
Test 4	Good L1 Readers = 30
	poor L1 Readers = 23
Mean	Good L1 Readers = 44.75
	Poor L1 Readers = 38.5

APPENDIX XVI

Syntactic Acceptability of Farsi Cloze Responses of Good and Poor L1 Readers

	4	3	2	1	0
	tot accep	accep in sen	accep after	accep prior	not accep
Good L1 Readers	74.8	8.61	6	8.1	2.3
Poor L1 Readers	71.5	2.4	4.4	9.8	11.6

APPENDIX XVII

Semantic Acceptability of Farsi Cloze Responses of Good and Poor L1 Readers

	6 tot accep	5 accep w/error	4 accep in sen	3 accep in sen w/error	2 accep after	1 accep prior	0 not accep
Good L1 Readers	77.4	.61	9.8	.09	3.2	6.3	2.6
Poor L1 Readers	62.9	2.3	7.3	.03	4.4	10.1	12.7

APPENDIX XVIII

Contingency Table for Total Register Scores as Measured by Cloze Tests

Scores(0-20)	High	Intermediate	Low	Total	
	0	3	5	8	(person)
0-4	0	7.5	11.4	6.8	(percentage)
	5	23	33	61	
5-9	14.7	57.5	75.0	51.7	
	25	14	6	45	
10-14	73.5	35.0	13.6	38.1	
	4	0		4	
15-19	11.8	0		3.4	
Column Total	34	40	44	118	
	28.8	33.9	37.3	100.0	