

AN ABSTRACT OF THE THESIS OF

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Title: Effect of Slot Openness on Word Recall:

Three Fundamental Theorems

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A Factorial Design was employed to determine the effects of slot openness on recall for familiar items in discrete sentences as stimulus contexts. A slot was defined as a locale in a verbal context, in which the target item is embedded. Low-openness slots are locales into which only given items can fit, whereas high-openness slots are locales into which many possible alternatives can fit. Two factors were involved in the experimental design, namely, degree of slot openness and test type. The former was the key factor, which had two levels -- high and low. The latter was a means of manipulating the key factor, which had three levels -- (1) read-recall with less cues, (2) read-recall with more cues, and (3) cloze-recall.

One hundred and twenty-six university students with Chinese as their first language were randomly assigned into six groups, with twenty-one in each. Eighty items were to be recalled. The raw scores of recall were transformed into a new scale of value by the natural log function for data

analysis.

The results of data analysis revealed two major findings. First, subjects who received low-openness slots not only reported greater ease, but also performed better, in recall for the target items than subjects who received high-openness slots. Second, at the .01 significance level, initial constituent letters of the target words were better recalled than the whole target words, however, regardless of the test types, there was no significant difference when the items-to-be-recalled were the initial constituent letters of the target words.

These empirical findings justified the validation of three fundamental theorems, according to which, (a) the recallability of a verbal item is an inverse function of the degree of openness of the slot in which the target item is located, (b) the degree of slot openness is, in turn, a function of the number of possible alternatives that can fit into the slot, and (c) the number of possible alternatives for a slot is determined by the verbal context in which the slot is involved.

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Effect of Slot Openness on Word Recall:
Three Fundamental Theorems

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Effect of Slot Openness on Word Recall:

Three Fundamental Theorems

CHAPTER I: STATEMENT OF THE PROBLEM

How contextual cues in verbal stimuli affect word recall is a question that has constantly intrigued cognitive psychologists, language educators, and researchers who are interested in language learning and language use. The present study focused on recall of familiar words and their constituent letters as target items. The verbal stimuli used for this study were discrete, semantically disconnected sentences. Contextual cues were defined as input information in the stimulus contexts, or, verbal environments in which the target items were embedded and processed.

Purpose of the Study

The purpose of this study was to determine the effects of schema levels on recall for familiar words in discrete sentences as stimulus contexts. Specifically, sentences with slots of high-degree openness were compared with sentences with slots of low-degree openness for testing differences in recall of familiar items in contexts.

Contextual Cues and Schema Levels

For research purposes in this study, a schema was pragmatically seen as a framework indicating the relationships of slots for specific items. It was assumed that

the level of schema involved in a stimulus sentence was determined by the contextual cues, or, the input information contained in the sentence, and that the more salient the contextual cues a stimulus sentence contained, the higher the schema level in which the sentence was involved.

Slots and Slot Openness

In this study, a slot in a stimulus sentence was defined as a locale in the sentence, in which the target item was situated. A stimulus sentence with a locale where the target item was less likely recognized was defined as a sentence with a slot of high-degree openness. The target item was less likely recognized in a slot of high-degree openness because apart from the target item, many other possible alternatives could also fit into the slot. Conversely, a stimulus sentence with a locale where the target item was more readily recognized was defined as a sentence with a slot of low-degree openness. The target item was more readily recognized in a slot of low-degree openness because not many possible alternatives other than the target item could fit into the slot.

Slot Openness and Schema Levels

The degree of slot openness was an inverse function of the schema level in which the slot was involved. The higher degree of openness a slot possessed, the lower the schema level in which the slot was involved. However, both slot

openness and schema level were determined by contextual cues, or, input information contained in the verbal context. The more salient the contextual cues in the verbal stimuli, the higher the schema level in which a slot was involved, and the lower the degree of openness of the slot.

Basic Predictions to Be Tested

In this study, three basic predictions were formed to be tested. The most important prediction was that recall for a target item was an inverse function of the degree of openness of the slot in which the target item is located. That is, the greater the number of possible alternatives that could fit into a slot, the higher degree of openness the slot possessed, and, as a result, the less recallable the target item situated in the slot. The second prediction was that subjects who received stimulus sentences with slots of low-openness would find recall for the target items easier than subjects who received stimulus sentences with slots of high-openness. Finally, it was predicted that subjects who found it easier to recall the target items would score higher on the instrument.

Three Fundamental Theorems

In this study, the predictions concerning recall for the target items in discrete sentences were based on three compatible fundamental theorems which expound the relations among three indices. According to the three theorems, (1)

Index A, the recallability of a target item in a slot was an inverse function of Index B, the degree of openness of the slot where the target item was located, while (2) Index B, the degree of openness of the slot where a target item was located was a function of Index C, the number of possible alternatives that could fit into the slot, and, therefore, (3) Index A, the recallability of a target item in a slot was also an inverse function of Index C, the number of possible alternatives that could fit into the slot in which the target item was located.

Theorem I

The greater the number of possible alternatives that can fit into a slot, the higher the degree of openness the slot possesses, and the less recallable the target item is. For example, given that sentences as stimulus contexts fall into any one of the patterns as follows:

John referred to the word " X ." (1)

John referred to the color " X ." (2)

John referred to the color "gre(X)." (3)

John referred to the color "(X)lue." (4)

then, $Y = f(1/n)$

where Y = the degree of recallability of a given item X ,

f = the function of, and,

n = the number of possible alternatives in terms of

a constituent letter of a word as in sentence

(4), or a series of constituent letters as in

sentence (3), or a word as in sentences (1) and (2).

In this case, n_1 can be an infinite number of words for sentence (1), n_2 dozens of words for sentence (2), n_3 two possible alternatives (i.e., "grey" and "green") for sentence (3), and n_4 one correct response (i.e., "blue") for sentence (4). Therefore, the prediction is:

$$Y_4 > Y_3 > Y_2 > Y_1$$

Theorem II

The greater the number of stimulus sentences that share the same pattern, the higher the degree of openness a slot in the pattern possesses, and the less recallable the target items in the slot are. For example, given that sentences as stimulus contexts fall into the pattern as:

The word " X_1 " sounds really great. (1)

The word " X_2 " sounds fairly grand. (2)

... (n)

The word " X_n " sounds rather grave. (n)

then, $Y = f(1/n)$

where Y = the degree of recallability of a given word X ,

f = the function of, and,

n = the number of stimulus sentences that share the same pattern.

In this case, the prediction is:

$$Y_{(n-i)} > Y_n > Y_{(n+i)}$$

where $n > i \geq 1$.

Theorem III

In a sentence with a fixed slot position where a constituent letter is to be recalled, the greater the number of possible alternative letters in forming existing words is, the higher the degree of openness the slot possesses, and the less recallable the target letter is. For example, given that sentences as stimulus contexts fall into the pattern as:

John referred to the word "(X₁)ame." (1)

John referred to the word "(X₂)hen." (2)

... ..

John referred to the word "(X_n)han." (n)

then, $Y = f(1/n)$

where $Y =$ the degree of recallability of a given letter X ,

$f =$ the function of, and,

$n =$ the number of possible alternative letters along with which certain existing words in English can be formed to fit the context.

In this case, the prediction is:

$$Y_{(n-i)} > Y_n > Y_{(n+i)}$$

where $n > i \geq 1$.

CHAPTER II: REVIEW OF RELATED LITERATURE

Intrinsic Contexts

Clark and Carlson (1981) have argued that one can hardly study memory performances without studying contexts, or the roles the surroundings play. This is especially true with intrinsic contexts which, according to Hewitt (1977, in Godden and Baddeley, 1980), refer to aspects of verbal stimuli that are inevitably processed when the stimuli are perceived. Typically, intrinsic contexts include the semantic characteristics of a word and its semantic and/or syntactic environment.

Context Effects on Memory Performances

In empirical studies of memory for words, there is always some change in context where a target word is studied to the context it is tested (Humphreys, 1976). The usual method of manipulating contexts for the study of memory performances is to present at least one of such contrasts as (1) contexts versus no-contexts, (2) normal contexts versus abnormal contexts, or (3) high-level contexts versus low-level contexts.

Contexts: Presence Versus Absence

Miller et al (1951) have reported that words are more intelligible when they are received in a meaningful or high-probability context than when they are presented in

isolation. They attributed this difference to a contextual reduction in the numbers of alternative words, and found that the smaller the set of alternative words, the easier it was to identify any particular word. Similarly, Goodman (1965) showed that children were able to read words in the context of a sentence, yet they were unable to do so when the words were presented alone. He also found that the facilitating effects of context increased along with grade level. Schwanenflugel and Shoben (1983) found that in the no-context condition, lexical decision time for abstract nouns was longer than that for concrete nouns. However, when presented in a sentence context, this difference disappeared. Furthermore, they found that context availability ratings were good predictors of reaction times including reading time and lexical decision time.

Contexts: Normal Versus Abnormal

Miller and Isard (1963) found that subjects reported many more words from stimulus sentences that were syntactically normal than from sentences in which normal syntactic structures were violated. In Thorndyke's (1977) study, subjects remembered more events from the text where the events were presented in a normal order rather than in a scrambled order. Bransford and Johnson (1972) reported that recall scores increased when subjects had been supplied with appropriate information (i.e., topics) before they heard a

test passage. However, supplying subjects with the same information after they heard the passage produced much lower recall scores.

Contexts: High-Level Versus Low-Level

Schwabenflugel and Shoben (1985) found that expected words were recognized more readily in high constraint sentences (as was the case with the target word "boss" in the stimulus sentence "The worker was criticized by his boss."), yet there was no such context effect for low constraint sentences (as was the case with the target word "cook" in the stimulus sentence "The lady was a competent cook."). Just and Carpenter (1987) also claimed that a target word is more predictable in a more constraining context (as the target word "pillow" in the stimulus context "I had a sore neck when I went to bed last night. I laid down slowly and gently placed my head on the pillow.") than in a less constraining context (as the target word "pepper" in the stimulus context "Jack was making dinner and he went to pick some things in his garden. He picked an onion, some beans, and a pepper."). Craik and Tulving (1975) have demonstrated that retention was enhanced when encoding context was more fully descriptive, and this beneficial effect was restricted to the cases where the target stimulus was compatible with the context. Similarly, Reder's (1983) study revealed that sentences containing all input

information pointing in the same direction had greater strength of context and were comprehended the fastest.

Basic Functions of Intrinsic Contexts

A brief review of the relevant literature as mentioned above shows that intrinsic contexts can have notable impacts on memory for words. The question is why do intrinsic contexts have such important influences? According to Rumelhart (1985), the importance of intrinsic contexts lies, basically, in their functions as follows:

First, the perception of letters often depends on their surrounding letters. For example, Reicher (1969) showed that a letter is more accurately perceived when it is part of a word than when it is among a set of unrelated letters.

Second, the perception of words depends on their syntactic environment. For example, Foss (1982) reported that while a related sentence context did facilitate the processing of a target word, a scrambled version of the related sentence failed to facilitate processing the target word.

Third, the perception of words depends on their semantic environment. For example, Tulving and Gold (1963) found that semantic relatedness can make the processing more efficient. Similarly, Samuels' (1968) study indicated that passage with stronger associative relationships between words was better recalled than passage with weaker

associative relationships.

Fourth, the interpretation of what is perceived depends mainly on the intrinsic contexts. For example, Halford et al (1976) have shown that words systematically shift meanings as a function of context. In using words (such as jam) with more than one meaning, Light and Carter-Sobell (1970) found that presenting them in one semantic context (jam/strawberry) and testing in another (jam/traffic) resulted in very poor performance. On the other hand, the more the context restricts the relevant sense of a word, the quicker the decision of lexical meaning could take place (Swinney, 1979).

Fifth, reinstatement of intrinsic contexts can be a useful aid to remembering (Craik, 1981). According to the encoding specificity principle (Tulving and Thomson, 1973), the principal requirement for successful remembering is a sufficient overlap of information between the products of input and retrieval processes (Tulving and Watkins, 1975). This principle implies that retrieval processing will be shaped and guided by both initial input for encoding and contextual cues for retrieval (Craik, 1979). Similarly, Cormier (1986) claimed that retrieval requires the presence of a stimulus representation acting as retrieval cues for working memory to undergo a match process, in which the processed stimuli are compared with memorial representation, or internal representation from permanent memory. Retrieval

occurs only when retrieval cues have attributes that overlap, at some criterion level, the encoded attributes of particular representations from permanent memory.

Schema and Memory Performances

Schema

Memory performances are guided by schemata (Bartlett, 1932). A schema can, according to Just and Carpenter (1987), be defined as a framework that at once contains a set of slots and indicates relationships among the slots involved. Each slot has possible fillers that can serve as default value, or, fallback value, should the situation fail to provide any. Therefore, as Widdowson (1983) put it, schemata can be seen as frames of references which provide a basis for prediction and allow for the organization of information in long-term memory.

Schema Levels

The schema involved in a stimulus context can be of different level. A high-level schema can be defined as one where the target information will be more likely to fit into the slot in question. Conversely, a low-level schema can be defined as one where the target information will be less likely to fit into the slot in question. Basically, what a schema entails is a set of expectations or stereotypic images that are hierarchically organized. Widdowson (1983) argued that if required to complete the

sentence "The soldier took aim at...", one's normal inclination would be "the target" (or, "the enemy") rather than "three o'clock" (or, "the door"). Anderson et al (1978) found that subjects received a passage containing a high-level schema better recalled the target information than those received a passage containing a low-level schema.

Contextual Cues and Schema Levels

The schema level involved in a stimulus context is determined by the quality of contextual cues, or input information contained in the context, for, the higher the quality of input information, the more likely the schemata of higher levels can be activated.

Various factors can affect the quality of contextual cues, such as the normality (Miller and Isard, 1963; Foss, 1982), the familiarity (Wittrock et al., 1975), the richness (Craik, 1981), the associativeness (Samuels, 1968) or the relatedness (Tulving and Gold, 1963; Light and Carter-Sobell, 1970; Swinney, 1979), the constraint level (Schwanenflugel and Shoben, 1985; Just and Carpenter, 1987), the specificity (Tulving and Thomson, 1973) and the discriminability (Miller et al., 1951; Thorndyke and Hayes-Roth, 1979), of the input information.

Discriminability of Stimulus Contexts

The discriminability of stimulus contexts affects memory performances. Thorndyke and Hayes-Roth (1979) have

shown that while the use of a familiar schema can facilitate memory performances, the multiple uses of the same schema as stimulus contexts may produce interference. They suggested that to eliminate such interference, it is crucial to increase the discriminability among competing contexts. Miller et al (1951) argued that the number of alternatives from which a test item is selected can be used to gauge the difficulty of desired performance, and that the index of such difficulty depends upon the range of possible items that could occur in the stimulus context.

Summary

A review of the related literature indicates that intrinsic contexts play important roles in memory performances. The presence of intrinsic contexts means information, linguistic and semantic, conceptual as well as perceptual; while the absence of intrinsic contexts means the lack of such information. Furthermore, in the presence of high-level contexts, it is more likely that schemata of higher levels can be triggered as an essential basis for memory to function. Therefore, other things being equal, the quality of memory performances depends on the schema level a stimulus context is involved in, which, in turn, is determined by the quality of contextual cues in general, and by the discriminability of the stimulus context in particular.

CHAPTER III: DESIGN OF THE STUDY

Subjects

The target population for this study was all foreign students whose first language was Chinese and who were officially enrolled in the Oregon State University during the Fall Term of 1986.

According to Cohen's (1969) sample size tables, given $u = 2$, the alpha level = .05, the power level ($1 - \beta$) = .80, and the effect size = .40, the minimum sample size should be, twenty-one per cell, or, one hundred and twenty-six in all.

Among all the subjects involved in this study, forty-two were females, and eighty-four were males. Their average age was 26.9 (SD = 4.9) years old. On the average, they had learned English as a second language for about 8.7 (SD = 4.2) years, and had been staying in English-Speaking countries for about 2.6 (SD = 3.6) years.

All the subjects involved were randomly assigned into six matrix cells to meet the statistical requirements of a 2 x 3 Factorial Design.

Statistical Tests Employed

Four types of statistical tests were employed for this study. A 2 x 3 Factorial Design was utilized to test the predictions concerning the effects of slot openness on the recall for the target items. A Chi-Square was applied to

test the prediction that subjects who received stimulus sentences with low-openness slots reported greater ease for recall. A Pearson r Test was used to determine the correlation between the subjects' recall scores and their ratings of the degree of difficulty of the recall task. The Split-Half Method was employed to determine the test reliabilities of the six tests for this study. In each test, the odd-numbered items for one score and the even-numbered items for another were pooled for the computation of the coefficient of internal consistency, or, $r(\text{half})$. The reliability for each test as a whole, or, $r(\text{whole})$, was obtained by applying the Spearman-Brown Prophecy Formula (Courtney, 1984) -- $r(\text{whole}) = 2r(\text{half})/(1 + r(\text{half}))$.

The Factorial Design

A 2 x 3 Factorial Design was used to determine the effects of slot openness on recall for the target items. The two independent variables for the design were: (1) the degree of slot openness -- high and low, and (2) the type of test -- two different types of read-recall tests and one cloze-recall test.

Three null hypotheses were formed to be tested. They were: (1) there was no significant difference in overall mean score for recall of the target items between the two levels of slot openness; (2) there was no significant difference in overall mean score for recall of the target

items among the three types of test; and (3) there was no significant effect of interaction between the two factors of slot openness and test type.

The mathematical model of the Factorial Design (Courtney, 1986) is:

$$Y_{ijk} = \mu + A_i + B_j + (AB)_{ij} + \epsilon_{k(ij)}$$

where μ = an unknown constant,

A_i = effect of Factor A (i.e., slot openness),

B_j = effect of Factor B (i.e., test type),

$(AB)_{ij}$ = interaction (i.e., slot x test), and,

$\epsilon_{k(ij)}$ = error.

The design can be represented schematically as in Table 1.

Table 1: Design Matrix

test type		slot openness	
		high	low
read-recall	less retrieval cue	n=21	n=21
	more retrieval cue	n=21	n=21
cloze-recall		n=21	n=21

Construction of Test Materials

Theoretical Model

The theoretical model employed for the construction of the test materials for this study was based on a marriage between the theory concerning the effects of schema level

(Anderson et al., 1978) or constraint level (Schwanenflugel and Shoben, 1985; Just and Carpenter, 1987) on memory performances and the theory of discriminability as a function of the number of possible alternatives (Miller et al., 1951; Thorndyke and Hayes-Roth, 1979).

Specific predictions concerning the patterns of the memory performances carried out in this study were based on three fundamental theorems according to which, (1) the recallability of a target item in a slot is an inverse function of the degree of openness of the slot, which, in turn, is a function of the number of possible alternatives that can fit into the slot, and (2) the number of possible alternatives that can fit into the slot in which the target item is situated is determined by the quality of contextual cues or input information in the stimulus sentence.

Slot Openness and Test Type

To meet the statistical requirements of a 2 x 3 Factorial Design, the test battery consisted of six different tests.

First, two sets of tests were constructed presenting a contrast in terms of slots of high-openness versus slots of low-openness. A sentence like "John referred to the word '_____.'" or, "John referred to the word '()ame'." was

treated as one with a slot of high-degree openness, for the possible alternatives for the slot are many. On the other hand, sentences such as "Fasten your seat _____ while driving." and "John referred to the color '(__)lue.'" were considered as sentences with slots of low-degree openness, for the number of possible alternatives to fit into these slots was limited. The construction required that while the test items from one set should be distinct, in slot openness, from their counterparts in the other set, test items within each set should share homogeneity in slot openness.

Meanwhile, three types of tests were constructed within each set of tests that shared homogeneity in slot openness. Type II test was read-recall with more retrieval cues (Appendix C: II: Tests 3 and 4). To take this type of test, subjects first read the stimulus sentences in their full forms and then recalled the target items with more retrieval cues which included (a) all constituent words except the target words in the stimulus sentences the subjects had read before, and (b) three more constituent letters in each target word. Typically, a sentence with a high-openness slot with more retrieval cues was:

Repeat the word "(__)elt" after me.

Similarly, a sentence with a low-openness slot with more retrieval cues was:

Fasten your seat (__)elt while driving.

Type I test was read-recall with less retrieval

cues (Appendix C: II: Tests 1 and 2). To take this type of test, subjects first read the same sentences as the subjects taking test 3 or 4 did. However, when the subjects were asked to recall the target items, they were provided with less retrieval cues which only included all constituent words except the target words in the stimulus sentences the subjects had read before, but did not include the three more constituent letters in each target word. A sentence with a high-openness slot with less retrieval cues was:

Repeat the word "_____" after me.

Similarly, a sentence with a low-openness slot with less retrieval cues was:

Fasten your seat _____ while driving.

The last type of test was different (Appendix C: II: tests 5 and 6). To take this type of test, the subjects were required to take a cloze test rather than only read all the stimulus sentences. Then, the subjects were asked to recall their responses for the cloze test in the presence of the stimulus contexts they had dealt with as retrieval cues. For example, for the high-openness group (Appendix C: II: Test 5), the subjects first filled into the blanks in eighty sentences similar to the one as:

Repeat the word "()elt" after me.

Then, the subjects were asked to recall the letters they had used to fill into the blanks for the cloze test. Similarly, for the low-openness group (Appendix C: II: Test 6), the

subjects filled in the blanks in eighty sentences similar to the one as:

Fasten the seat ()elt while driving.

Then, they were asked to recall the letters they used for the cloze test.

Test Constructions: Decisions

To improve the validity and reliability of the measurements for the present experiment, the test materials were constructed according to the decisions made on the basis of related literature.

Selections of Target Words: Eighty target words were selected (Appendix A).

The number of test items can directly influence test reliability. It was reported (Henning, 1982) that for most paper-and-pencil tests in English as a second language, it is difficult to achieve reliability at .85 level or above with less than fifty items.

Just and Carpenter (1987) found that other things being equal, readers spent about 90 milliseconds longer on a seven-letter word than on a four-letter word. To control the effect of word length, all the eighty target words used for this experiment consisted of four letters.

Just and Carpenter (1987) reported that frequent words were processed faster and more accurately than infrequent ones. All the eighty target words selected for this study

were of high-frequency according to the American Heritage Word Frequency Book (Carroll et al., 1971).

Test Items: For this study, eighty pairs of test items in sentence contexts were constructed (Appendix B).

Research (Aborn et al., 1959) indicated that increasing the context beyond ten words does not increase predictability, and that the length at which a sentential context attains maximum effectiveness lies between five and ten words. For this study, each stimulus sentence in its full form contained six common words, or, words with which the subjects were familiar conceptually as well as perceptually. In each stimulus sentence, one, and only one, target word was embedded.

Research (Bransford and Johnson, 1972; Anderson et al., 1977) on content knowledge suggested that there exists the effect of topic knowledge on memory performances. The thematic content of all the test items employed for this experiment was based on common knowledge. Therefore, it was unlikely that any subject was able to perform the task for this experiment better simply due to his or her professional background.

Locations of Slots: Some researchers (Aborn et al., 1959; Weaver, 1977) found that a bilaterally distributed context exerts greater constraint than a totally preceding or totally following context of the same length, though

others (Garner, 1962) reported that the bilateral context is not particularly advantageous compared to the unilateral context. Each test used in this study consisted of twenty sentences in which the target words were located at the final, the last but one, the last but two, and the last but three, positions in the sentences respectively (Appendix B).

Positions of Constituent Letters as Target Items:

Rumelhart and McClelland (1982) reported that in perceiving the constituent letters of four-letter words, there existed the serial-position effects, namely, that initial letters were most accurately reported while the third letters were least accurately reported. In this study, initial letters of the target words were to be recalled in two types of test -- cloze-recall and read-recall with more retrieval cues.

Order of Test Items: The order of the stimulus sentences was randomly arranged. The procedures were as follows:

(1) Ten sentences with slots of low-degree openness from each twenty sentences with the target words in the same position were selected in a random way. Thus, (10 x 4) forty sentences were selected out of the eighty.

(2) These forty sentences with slots of low-degree openness were then arranged as the test items of odd numbers (1, 3, 5, ..., and 79).

(3) In the same way, the other forty sentences of the same set were randomly arranged as the test items of even numbers (2, 4, 6, ..., and 80).

(4) The eighty sentences with slots of high-degree openness were arranged in exactly the same order as their low-degree counterparts.

Instructions: To increase test reliability, the instructions concerning how the tests were taken had to be consistent. The wording of the instructions for the four read-recall tests was kept the same (Appendix C: I: Tests 1, 2, 3, and 4). Since the cloze-recall tests were of a different type than the other four tests, the wording of the instructions differed accordingly (Appendix C: I: Tests 5 and 6). However, for these two cloze-recall tests, the wording of the instructions was kept alike as well.

An introduction (Appendix D) was written about the purpose of the study, the guarantee of confidentiality, the researcher's appreciation to the subjects' cooperation, and the method to contact the researcher for the results of the experiment. This introduction was used for all subjects involved in this study.

Answer-Sheet and Self-Evaluation: In this study, all subjects used the same form of Answer-Sheet (Appendix E), and the same form of Self-Evaluation treatment which concerned the degree of difficulty of the test that the subjects took respectively (Appendix F).

Summary

Four statistical procedures were employed in this study. One hundred and twenty-six university students with Chinese as their first language were randomly assigned into six groups. A 2 x 3 Factorial Design was utilized to test three null hypotheses concerning the effects of slot openness on recall for familiar items in discrete sentences as stimulus contexts. The construction of the test materials for this study was based on three fundamental theorems according to which, the recallability of a verbal item is an inverse function of slot openness which, in turn, is a function of the number of possible alternatives determined by the verbal context of the slot. Furthermore, based on related literature, major decisions were made to improve the test validity for this experiment.

CHAPTER IV: TREATMENTS, ANALYSES, AND RESULTS

Two major tasks were performed by the subjects in the present experiment. They were (a) the recall tests, and (b) the self-evaluation of the degree of difficulty of the recall test the subjects had taken respectively.

Recall Tests

Treatments

The tests were presented in an open-ended format. Subjects were asked to recall the target items with parts of the stimulus sentences as retrieval cues. Subjects in the cloze-recall group were first asked to take, within 24 minutes, the cloze tests, in which the initial constituent letters of the target words were blanked out for the subjects to fill in. Then, within 24 minutes, the subjects were required to recall the target letters using the same stimulus sentences as retrieval cues. Subjects in the read-recall groups were asked first to read, within 24 minutes, the stimulus sentences in full. Then, within 24 minutes, the subjects were required to recall the target items. Subjects in the more-retrieval-cue groups recalled the target items with everything but the initial letters of the target words in the same stimulus sentences they had read before. Subjects in the less-retrieval-cue groups recalled the target words themselves in the same stimulus sentences they had read before.

Raw cores

The cell means of raw scores and their standard deviations for recall of the target items are reported in Table 2.

Table 2: Raw Scores for Recall: Means and Standard Deviations

group	1	2	3	4	5	6
mean	2.71	60.19	42.05	76.71	58.19	74.14
S.D.	1.87	8.61	10.70	2.88	12.71	4.50

Scale Transformation

The cell means reported in Table 2 revealed that the scale measurements represented skewed data; there was a considerable discrepancy of the cell means between the first group and the others.

According to Courtney (1984), most social science data should be transformed before applying a statistical test such as analysis of variance. Thus, the natural log function of the scale value was employed to transform the raw scores of recall for the target items into new scale scores, which reduced the importance of high values and improved the importance of low values.

The cell means and their standard deviations for recall based on the new scale are reported in Table 3.

Table 3: Means and Standard Deviations for Recall
Based on Data Modified by Natural Log
Function of Scale Value

SLOT OPENNESS	N	\bar{X}	.SD
high	63	2.9787	1.3691
low	63	4.2577	.1478
TEST TYPE			
less cue	42	2.6308	1.5549
more cue	42	4.0410	.3681
cloze	42	4.1828	.2502
GROUP			
1	21	1.1584	.6160
2	21	4.1033	.1556
3	21	3.7296	.2698
4	21	4.3524	.0378
5	21	4.0481	.2940
6	21	4.3176	.0618

Analysis of Variance

The results of a two-way analysis of variance based on the data modified by the natural log function reported in Table 4 revealed: (a) there was a significant difference between the two levels of slot openness, $F(1,120) = 544.277$, $p < .001$, (b) there were significant differences among the three levels of test type, $F(2,120) = 326.582$,

$p < .001$, and (c) there existed a significant interaction effect between slot openness and test type, $F(2, 120) = 234.253$, $p < .001$.

Table 4: Analysis of Variance for Recall Related to Slot Openness and Test Type Based on Data Modified by Natural Log Function

source of variation	df	SS	MS	F	p<
slot	1	51.534	51.534	544.277	.001
test	2	61.844	30.922	326.582	.001
slot x test	2	44.360	22.180	234.253	.001
error	120	11.362	.095		
total	125	169.101			

The L.S.D. Test

Since the analysis of variance indicated that there were significant differences among the three levels of test type, the Least Significant Difference (L.S.D.) test was employed as a follow-up procedure to ascertain the locations of difference. Courtney (1984) stated that compared with other tests for multiple comparisons of overall means, the L.S.D. test is more powerful. However, it permits the testing of only $K-1$ alternate hypotheses. Hence, the probability of committing Type I errors is less.

Table 5: The Computations of the L.S.D. Test

An analysis of variance for recall based upon the modified data revealed the following results:

source	df	SS	MS	F	p
test	2	61.844	30.922	326.582	.001
error	120	11.362	.095		
total	122	73.206			

The F test indicated that significant differences existed among the overall means of the three levels of test type. The L.S.D. test was employed to ascertain the locations of differences. The computational procedures were as follows:

$$\text{Given: } S^2 \doteq \text{MS error} = .095$$

$$N = 42, \text{ alpha} = .01, \text{ and}$$

$$t = 2.617 \text{ (based upon } df = 120, \text{ the closest table value to } df = 123),$$

$$\begin{aligned} \text{L.S.D.} &= t \sqrt{2 S^2/N} = 2.617 \sqrt{2(.095)/42} \\ &= .1760 \end{aligned}$$

test type	\bar{X}_s	Differences (Subtracted)	Decisions and Conclusions
3	4.18	.14 not significant ($u_3 = u_2$)
2	4.04		
1	2.63	1.41 significant ($u_2 > u_1$)

The results of the L.S.D. test, as reported in Table 5, indicated that at the .01 level of significance, there was no difference in the overall means of recall for the target items between the cloze-recall tests and the read-recall tests with more retrieval cues. However, the overall mean of the read-recall tests with more retrieval cues was greater than that of the read-recall tests with less retrieval cues. Therefore, a logical conclusion was that the overall mean of the cloze-recall tests was greater than that of the read-recall tests with less retrieval cues.

Self-Evaluation

After completion of the recall tests, subjects in each of the six groups were asked to rate the degree of difficulty of the recall test they had taken. A nine-point scale (Appendix F) was used for the self-evaluation, with 1 indicating that the task was very difficult, 5 moderately easy, and 9 very easy.

The null hypothesis stated that there were no significant differences in the ratings among the six groups. A Chi-Square procedure was employed to test the null hypothesis. Ratings less than 5 were defined as "difficult," while ratings equal to, or, greater than 5 were defined as "easy." The data reported in Table 6 indicated that the null hypothesis was rejected at a very

high significance level, $p = .00001$. These results revealed that subjects in groups 2, 4, and 6, who received sentences with slots of low-openness as stimulus contexts, found it easier to recall the target items than those in groups 1, 3, and 5 who received sentences with slots of high-openness as stimulus contexts.

Table 6: Chi-Square for Self-Evaluation

group	1	2	3	4	5	6	total
difficult	21	0	11	0	4	0	36
easy	0	21	10	21	17	21	90
total	21	21	21	21	21	21	126

$$\chi^2 = 84.4667, df = 5, p = .00001$$

Pearson Product-Moment Correlations

A Pearson Product-Moment Correlation was used to determine how closely the individual ratings of the degree of difficulty of the recall tasks and their scores of recall for the target items were related. The correlation coefficient reported in Table 7 indicated that there was a high positive correlation between the two sets of measures.

The Pearson r tests were employed to determine the correlations among the individual variables in terms of age, years of residence in English-Speaking countries (YRE), years of studying English as a second language (YSE), self-evaluation of the degree of difficulty of the

recall test (SELFEV), and the scores of recall for the target items (SUBTOT). The results of the Pearson correlation coefficients presented in Table 7 revealed that the only individual variable that highly correlated with the scores of recall at a significant level was the subjects' self-evaluation on the degree of difficulty of the recall tests. The subjects' age, years of residence in English-Speaking countries, or years of studying the language did not correlate significantly.

Table 7: Pearson Correlation Matrix

	AGE	YRE	YSE	SELFEV	SUBTOT
AGE	1.0000 (0) p=****				
YRE	-.1459 (126) p=.052	1.0000 (0) p=****			
YSE	-.0378 (126) p=.337	.3497 (126) p=.001	1.0000 (0) p=****		
SELFEV	.0474 (126) p=.299	.0512 (126) p=.285	.1260 (126) p=.080	1.0000 (0) p=****	
SUBTOT	.0621 (126) p=.245	.0328 (126) p=.358	.1295 (126) p=.074	.9344 (126) p=.001	1.0000 (0) p=****

(Below the coefficient or r value is the number of cases and below that the level of significance for the correlation.)

Test Reliability

The Split-Half Method was employed to determine the reliability of each of the six tests. The results reported in Table 8 indicated that all tests except Test 1 achieved the reliability at the .85 level or above.

Table 8: Reliabilities of the Six Tests

test	1	2	3	4	5	6
r(whole)	-.626	.881	.931	.848	.925	.855

Summary

Two major tasks were carried out in this experiment, namely, recall of the target items and evaluations of the recall tests. The raw scores of recall presented skewed data which were transformed by the natural log function before data analysis. The results of data analyses revealed that (a) subjects who received low-openness slots found it easier to recall the target items than those subjects who received high-openness slots, (b) subjects' self-evaluation on the degree of difficulty of the recall tests was the only involved variable that highly correlated with their recall scores, (c) there existed an effect of slot openness, of test type, and of interaction between slot openness and test type, and (d) all the six tests except one achieved the reliability at the .85 level or above.

CHAPTER V: DISCUSSION

Findings

Ratings of Test Difficulty

The most salient finding of the present experiment was that subjects who received sentences with slots of low-openness as stimulus contexts reported significantly greater ease in recalling target items than those who received sentences with slots of high-openness as stimulus contexts. This finding was supported by the result of the Chi-Square procedure, $\chi^2 = 84.4667$, $df = 5$, $p = .00001$.

Furthermore, the Pearson Product-Moment procedures revealed that among all the individual variables under observation, only that of the subjects' self-evaluation presented a significantly high positive correlation with their scores of recall for the target items, $r = .9334$, $p = .001$. This finding indicated that compared with other individual variables, the subjects' ratings of the degree of difficulty of the recall tests were the best predictor for the memory performance of recall for the target items. This conclusion was corroborative of Schwanenflugel and Shoben's (1983) finding that ratings of context availability were good predictors of reaction time.

Effect of Slot Openness

One of the most substantive findings of the present

study was that the openness of the slots in the stimulus contexts proved to have a significant effect on the recall of the target items located in the slots. The result of the analysis of variance, $F(1,120) = 544.277, p < .001$, revealed that target items were significantly better recalled in the slots of low-openness ($\bar{X} = 4.2577, SD = .1478$) than in the slots of high-openness ($\bar{X} = 2.9787, SD = 1.3691$). As was predicted, this indicated that recall for target items in discrete sentences as stimulus contexts was an inverse function of the degree of openness of the slots where the target items were situated. This finding justified the validation of the three fundamental theorems based upon which (a) the predictions about the patterns of the memory performance of recall for the target items were made, (b) the test items for the present experiment were constructed, and (c) the tests for the present study were designed.

Effect of Test Type

Another major substantive finding of the present study was the significant effect of test type on recall for the target items. The results of the analysis of variance, $F(2,120) = 326.582, p < .001$, revealed that there were significant differences among the three levels of test type, namely, the read-recall tests with less retrieval cues, the read-recall tests with more retrieval cues, and the cloze-

recall tests.

However, the result of the L.S.D. procedure indicated that at the .01 significance level, (a) there was no significant difference between the overall mean of the cloze-recall tests ($\bar{X} = 4.18$, $SD = .2502$) and that of the read-recall tests with more retrieval cues ($\bar{X} = 4.04$, $SD = .3681$), whereas (b) both the overall mean of the cloze-recall tests and that of the read-recall tests with more retrieval cues were significantly greater than the overall mean of the read-recall tests with less retrieval cues ($\bar{X} = 2.63$, $SD = 1.5549$).

To better understand the location of the differences, it was essential to determine an awareness of the intrinsic difference among the three levels of test type. In effect, the factor of test type consisted of two subfactors, namely test format and target item. The first subfactor, test format, had two levels -- read-recall and cloze-recall. The second subfactor, target item, also had two levels -- whole target words and the first constituent letters of the target words. As far as the factor of test type is concerned, the design of the present experiment can be schematically redisplayed as follows:

test type	I	II	III
test format	read-recall with less cue	read-recall with more cue	cloze- recall
target item	whole word	first constituent letter	

This scheme revealed that for test type I, whole target words were to be recalled, whereas for the other two types of tests, only the initial constituent letters of the target words were to be recalled. This fact suggested that as far as the subfactor of target item is concerned, (a) the tests of types II and III were of the same category, which may, to a great extent, have explained why there was no significant difference between their overall means, whereas (b) test type I was different from both types II and III, which may, to a great extent, have explained why there were significant differences among their overall means.

The Interaction

The present study also revealed that there existed a significant interaction, $F(2,120) = 234.253$, $p < .001$, between slot openness and test type. The interaction graph (Appendix G) indicates that (a) target items were better recalled in low-openness slots than in high-openness slots, and (b) target items were better recalled in both the cloze-recall tests and the read-recall tests with more cues than in the read-recall tests with less cues.

To unravel the crux of the interaction between slot openness and test type, it is crucial to remember that the factor of test type was but a covert means of manipulating the key factor in the experimental design for the present study, namely, the degree of openness of the

slots where the items-to-be-recalled were located.

For instance, Theorem I had explicitly predicted that the degree of recallability of the first constituent letter of the target word "blue" in a stimulus sentence like "John referred to the color '()lue.'" is much greater than that of the whole target word "blue" in a similar stimulus sentence like "John referred to the word '_____.'" The reason for this is that the openness of the slot in the former case is much lower than that in the latter case. This, to a great extent, explains why the cell mean of group 4 ($\bar{X} = 4.3524$, $SD = .0378$) greatly outweighed that of group 1 ($\bar{X} = 1.1584$, $SD = .6160$).

Furthermore, Theorem I had also explicitly predicted that the degree of recallability of a target word of color is greater in a stimulus sentence like "John referred to the color (X)." than in a similar stimulus sentence like "John referred to the word (X)." The reason for this is the same. That is, the openness of the slot is much lower in the former case than in the latter one. This, to a great extent, explains why the cell mean of group 2 ($\bar{X} = 4.1033$, $SD = .1556$) greatly outweighed that of group 1 ($\bar{X} = 1.1584$, $SD = .6160$).

It is worth noticing that out of the six recall tests employed for this empirical study, the one taken by the first group was rated by the subjects as the most difficult.

The outcome of the subjects' ratings was justifiable. There were two involved factors that made the first test the most difficult one, namely, that (a) unlike test 2, the slots in test 1 were not of low but high openness, and (b) unlike the other four tests, the target items in test 1 were whole target words, not the initial constituent letters of the target words.

Summary of Findings

The present study revealed three most substantive findings. First, it was found that subjects received stimulus contexts with low-openness slots reported greater ease in recalling target items than those received stimulus contexts with high-openness slots, and that the subjects' ratings of the degree of difficulty of the recall tests presented a high positive correlation with their scores of recall for the target items. Second, as was predicted, recall for target items in discrete sentences was an inverse function of the degree of openness of the slots where the target items were located. That is, the higher the slot openness, the less recallable the target item located in the slot. Third, at the significance level of .01, the initial constituent letters of target words were better recalled than the whole target words. However, regardless of the test format, there was no significant

difference in the overall means of scores for recall when the significance level was at .01 and the target items were initial constituent letters of the target words.

These findings were closely related to slot openness, the key factor in the present experiment. Unlike many other 2 x 3 factorial designs, the second factor -- test type including test format and target item -- was but a covert means of manipulating the key factor -- the openness of slots where the target items were located.

These three empirical findings justified the validation of the three fundamental theorems concerning the effects of slot openness on recall for items in discrete sentences as stimulus contexts. Basically, the three theorems depicted two associated predictions, namely, that the memory performance of recall for target items is an inverse function of the degree of slot openness which, in turn, is a function of the number of possible alternatives for the slots whose degrees of openness are determined by the verbal contexts around them.

Implications for Further Research

For further research concerning effects of slot openness on recall of target items in discrete sentences as stimulus contexts, there are three suggestions to make. First, for the study of memory performance in question, it would be of great value to measure, in a precise way,

subjects' reaction time in terms of reading the stimulus sentences, taking the cloze tests, and recalling the target items. Based on the findings in this study, one prediction can be that in the cloze-recall tests, subjects receiving low-openness slots will take more time for the cloze tests but less time for the recall tests later whereas the opposite may be the case with subjects receiving high-openness slots.

Second, in order to test the validity of the theorems in a more exclusive manner, experiments could be conducted by focusing on one theorem at a time. Or, third, to further investigate the effect of the factor of target item, the effect of the factor of the test format, and the interaction effect simultaneously, it would be worthwhile to employ an alternate factorial design of slot openness x target item x test format. The alternate experimental design can be schematically presented as follows:

slot openness	HIGH				LOW			
test format	RR		CR		RR		CR	
target item	WW	1L	WW	1L	WW	1L	WW	1L
test group	1	2	3	4	5	6	7	8

RR = Read-Recall, CR = Cloze-Recall, WW = the Whole target Word, and 1L = the first constituent Letter of the target word.

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APPENDIX

APPENDIX A

Word Frequencies of the 80 Target Words

(according to the list in The American Heritage Word
Frequency Book (Carroll et al., 1971)):

hand	2316	like	9696	back	5862	down	7206
play	2113	come	4676	good	5343	look	4933
hard	1980	name	3766	soon	2129	keep	2509
fire	1227	form	2720	less	1366	year	2277
full	1144	want	2655	mean	1266	ever	2036
blue	1071	five	1725	gone	1077	days	2003
sing	1014	face	1629	rock	925	sure	1956
hour	908	wide	863	soil	921	call	1374
late	689	dead	590	pair	724	mind	1046
meet	627	hope	544	pass	480	main	926
meat	617	nose	544	onto	401	poor	851
corn	545	cool	500	mine	378	sent	835
fill	487	deal	480	sick	334	wish	707
coat	391	sold	477	wash	252	case	646
camp	378	nice	422	seed	243	cost	610
lake	319	mile	344	bark	204	east	461
mail	203	bell	321	port	193	path	436
vote	196	weak	245	belt	174	flow	352
bite	172	toes	169	sink	149	dust	340
harm	148	rush	132	calm	137	nest	333

APPENDIX B

The 80 Pairs of Test Item:

1. Pay attention to the word "hand."
These products were made by hand.
2. He didn't notice the word "play."
What roles did your sister play?
3. What's equivalent to the word "hard?"
They meant well; they tried hard.
4. Who first got the word "fire?"
Use stairways in case of fire.
5. What is the opposite of "full?"
I've eaten a lot; I'm full.
6. John referred to the word "blue."
John referred to the color blue.
7. Why not use the word "sing?"
They love to dance and sing.
8. Please cross out the word "hour."
Sixty minutes just equals an hour.
9. She doesn't like the word "late."
Hurry up; otherwise we'll be late.
10. How to spell the word "meet?"
We can make both ends meet.
11. How to define the word "meat?"
She's vegetarian; she eats no meat.
12. We did quote the word "corn."
They plant wheat, bean, and corn.
13. I'm familiar with the word "fill."
I've an application form to fill.
14. Bob told me the word "coat."
It's cold. Put on your coat.
15. Do you understand the word "camp?"
They stayed overnight in the camp.
16. What is the word before "lake?"
There is no fish in this lake.

17. Did you copy the word "mail?"
Jan sent the letter by mail.
18. What do you mean by "vote?"
Kids are too young to vote.
19. Please stop using the word "bite."
His bark's worse than his bite.
20. Just think of the word "harm."
Drinking clean water causes no harm.
21. Please say the word "like" now.
Take it -- if you like it.
22. We'll use the word "come" later.
What goes up will come down.
23. Please say the word "name" again.
Is "Scott" your family name, sir?
24. Put down the word "form" here.
Content should come first, form second.
25. Let's put the word "want" aside.
We're rather weak, we want help.
26. You mean the word "five," right?
A normal hand has five fingers.
27. You guessed the word "face" right.
Reality is reality. Let's face it.
28. He chose the word "wide" instead.
The doors would be wide open.
29. Who wrote the word "dead" first?
Actually, Latin is a dead language.
30. We'll use the word "hope" regardless.
"Are we late?" "I hope not."
31. Just cross the word "nose" out.
He's ahead by a nose only.
32. Why isn't the word "cool" right?
Calm down; keep a cool head.
33. Look up the word "deal," please.
Phil's very easy to deal with.

34. He heard the word "sold" later.
All the tickets were sold out.
35. Listen to the word "nice" carefully.
Be good boys and nice girls.
36. How was the word "mile" selected?
These stations are one mile apart.
37. What does the word "bell" mean?
Nobody has heard the bell ring.
38. Why is the word "weak" incorrect?
He's strong outwardly but weak inwardly.
39. She prefers the word "toes" anyway.
Don't step on my toes, please.
40. Nobody mentioned the word "rush" yet.
Let us avoid the rush hours.
41. Bear the word "back" in mind.
He is walking back and forth.
42. Should the word "good" be included?
They're really very good at math.
43. Did you say "soon" just now?
Finish it as soon as possible.
44. Write the word "less" down now.
They're more or less the same.
45. Is the word "mean" a verb?
A little may mean a lot.
46. Put the word "gone" into French.
It's past and gone. Forget it.
47. Does the word "rock" make sense?
Do you like rock and roll?
48. Is the word "soil" so meaningful?
They're preparing the soil for seed.
49. The meaning of "pair" is clear.
That's a good pair of shoes.
50. Say the word "pass" loudly, please.
Did he not pass the examination?

51. A word like "onto" is important.
The pen slipped onto the floor.
52. A word like "mine" is missing.
This book isn't mine, it's his.
53. Is the word "sick" a noun?
Bob has been sick with flu.
54. Should the word "wash" be used?
Before meals we wash our hands.
55. A word like "seed" was unmarked.
Farmers sow the seed in spring.
56. Spell the word "bark," will you?
The dog doesn't bark very often.
57. Forget the word "port" just mentioned.
That ship in port looks foreign.
58. Repeat the word "belt" after me.
Fasten your seat belt while driving.
59. Does the word "sink" sound new?
We will try, sink or swim.
60. The dictionary says "calm" was misspelled.
Despair makes a calm death difficult.
61. The word "down" is the key.
Let's sit down for a rest.
62. The word "look" is not new.
Take a look at the picture.
63. The word "keep" sounds very familiar.
They always keep their own promises.
64. The word "year" did not appear.
In which year was Jack born?
65. The word "ever" is often used.
Have you ever been to Alaska?
66. The word "days" hasn't been found.
He works days and studies nights.
67. The word "sure" is often abused.
He is sure John came once.

68. The word "call" is not appropriate.
New situations call for new solutions.
69. The word "mind" is a cue.
Do you mind my smoking here?
70. The word "main" doesn't sound right.
Listen for main ideas, not details.
71. The term "poor" needs a definition.
Rich or poor, he's always unhappy.
72. The word "sent" wasn't big enough.
Haven't they sent the message yet?
73. The word "wish" is very useful.
We all wish you great successes.
74. The word "case" wasn't his choice.
In no case should anybody lie.
75. The word "cost" must be underlined.
These books cost me fifty dollars.
76. Please say "east" one more time.
West or east, home's the best.
77. The word "path" was not capitalized.
This beaten path won't lead anywhere.
78. The word "flow" was not stressed.
These rivers flow into the sea.
79. The word "dust" fits the case.
Don't throw dust in our eyes.
80. The word "nest" could be wrong.
Birds always nest on this tree.

APPENDIX C

I: Instructions for the Six TestsTests 1 - 4: For the Reading

Here are 80 sentences. Each sentence consists of six common words. Please read **ALL** these sentences in a careful way. Read each sentence **THREE TIMES**. You will have **24** minutes to finish reading all the sentences.

Tests 1 and 2: For the Recall

Here are 80 sentences. They are exactly the **SAME** sentences that you have read before. However, in each sentence, one four-letter word is missing. What you are going to do is (1) to find the word that is missing, and (2) to write down, **on the answer sheet**, exactly the same word that was originally used in the sentence you read before. You will have **24** minutes to complete the 80 sentences. Time is limited. Please do not spend too much time on any particular problem. Do the easy ones first and then come back to those that might be somewhat difficult.

Tests 3 and 4: For the Recall

Here are 80 sentences. They are exactly the **SAME** sentences that you have read before. However, in each sentence, the first letter of an underlined four-letter word is missing. What you are going to do is (1) to find

the letter that is missing, and (2) to write down, **on the answer sheet**, exactly the same letter that was originally used in the sentence you read before. You will have **24** minutes to complete the 80 sentences. Time is limited. Please do not spend too much time on any particular problem. Do the easy ones first and then come back to those that might be somewhat difficult.

Test 5: For the Cloze

Here are 80 sentences. However, they are not complete. In each sentence, there is one underlined word of which the first letter in the brackets is missing. What you are going to do is (1) to read each sentence in a careful way, and (2) to find one (and only one) letter. Together with that letter you found, the four letters underlined should form a word in English. This should be an existing, or, a real, word in English. Besides, this word should fit the sentence both in grammar and meaning.

Example A: Please say the word "()hen" again. To form a real word in English, here we can have two choices. The possible letter for the brackets can either be "t" or "w." That is, the resulting sentence can be either one of the two sentences as follows--

(1) Please say the word "then" again.

(2) Please say the word "when" again.

Example B: Do you know the word "()ise?"

In this case, the possible letters can be "r," "w," "v," "m," and etc. Since there are so many choices, it would be better that you choose the letter with which a word you are familiar with can form, such as "rise," "wise," and the like.

Once you find the missing letter, you are to write it down **on the answer sheet**. You will have **24** minutes to finish the 80 sentences. Time is limited. Please do not spend too much time on any particular problem. Do the easy ones first and then come back to those that might be somewhat difficult.

Test 5: For the Recall

Here are 80 sentences. They are exactly the **SAME** sentences that you have read before. In each sentence, however, the first letter of an underlined word is missing. What you are going to do is (1) to recall the letter you used last time for the brackets, and (2) to write down, **on the answer sheet**, exactly the same letter you used last time for the brackets.

Example A: Please say the word "()hen" again. If you remember that last time the letter "t" was chosen, this time you should still write that letter on your answer sheet. If your choice last time was "w" instead, then you should, this time, also put the letter "w" down on your answer sheet. This means you should fill the

brackets in exactly the way you did last time, if you remember what your choice was last time for the sentence.

Example B: Do you know the word "()ise?"

If you remember that your choice last time was the letter "r," then just write that letter on your answer sheet. If, however, you are not sure what was the letter you selected last time for this sentence, you can, then, choose one letter that you feel you might have selected before and write that letter down on your answer sheet.

You will have 24 minutes to finish the 80 sentences. Time is limited. Please do not spend too much time on any particular problem. Do the easy ones first and then come back to those that might be somewhat difficult.

Test 6: For the Cloze

Here are 80 sentences. However, they are not complete. In each sentence, there is one underlined word of which the first letter in the brackets is missing. What you are going to do is (1) to read each sentence in a careful way, and (2) to find one (and only one) letter. Together with that letter you found, the four letters underlined should form a word in English. This should be an existing, or, a real, word in English. Besides, this word should fit the sentence both in grammar and meaning.

Example A: Where and ()hen shall we meet?

To form a real word in English, the missing letter can be

either "t" or "w." However, to fit the sentence in grammar and meaning, the letter "w" is the only choice. That is, the resulting sentence should be--

Where and when shall we meet?

Example B: When will the sun ()ise?

In this case, though the possible letters to form a real word in English can be "r," "w," "v," "m," and etc., however, to fit the sentence in grammar and meaning, the letter "r" is the only choice. That is, the resulting sentence should be--

When will the sun rise?

Once you find the missing letter, you are to write it down **on the answer sheet**. You will have **24** minutes to finish the 80 sentences. Time is limited. Please do not spend too much time on any particular problem. Do the easy ones first and then come back to those that might be somewhat difficult.

Test 6: For the Recall

Here are 80 sentences. They are exactly the **SAME** sentences that you have read before. In each sentence, however, the first letter of an underlined word is missing. What you are going to do is (1) to reread the sentences in a careful way, (2) to refind one (and only one) letter that fits the sentence in grammar and meaning, and (3) to write down the letter you refound **on your answer**

sheet.

Example A: Where and ()hen shall we meet?

If you chose the letter "w" last time and now you still feel that this should be the choice, just write down that letter on your answer sheet. If, however, your choice last time was not "w," but now you feel it should be "w," you **can** change your mind and write the letter "w" down on your answer sheet this time.

Example B: When will the sun ()ise?

If you remember that your choice last time was the letter "r" and you feel the answer should remain so, just write down this letter on your answer sheet. However, if your choice last time was a different letter, and now you feel that the letter "r" is the answer, you **can** change your mind and write the letter "r" on your answer sheet this time.

You will have 24 minutes to finish the 80 sentences. Time is limited. Please do not spend too much time on any particular problem. Do the easy ones first and then come back to those that might be somewhat difficult.

APPENDIX C

II: The Six TestsTests 1 and 3: For the Reading

1. Did you copy the word "mail?"
2. What do you mean by "vote?"
3. Pay attention to the word "hand."
4. He didn't notice the word "play."
5. The word "dust" fits the case.
6. The word "nest" could be wrong.
7. Please stop using the word "bite."
8. Just think of the word "harm."
9. The meaning of "pair" is clear.
10. Say the word "pass" loudly, please.
11. What is the opposite of "full?"
12. John referred to the word "blue."
13. Listen to the word "nice" carefully.
14. How was the word "mile" selected?
15. The word "cost" must be underlined.
16. Please say "east" one more time.
17. Look up the word "deal," please.
18. He heard the word "sold" later.
19. Who wrote the word "dead" first?
20. We'll use the word "hope" regardless.
21. Did you say "soon" just now?
22. Write the word "less" down now.

23. The word "ever" is often used.
24. The word "days" hasn't been found.
25. I'm familiar with the word "fill."
26. Bob told me the word "coat."
27. Let's put the word "want" aside.
28. You mean the word "five," right?
29. A word like "onto" is important.
30. A word like "mine" is missing.
31. Does the word "sink" sound new?
32. The dictionary says "calm" was misspelled.
33. The word "keep" sounds very familiar.
34. The word "year" did not appear.
35. How to define the word "meat?"
36. We did quote the word "corn."
37. She prefers the word "toes" anyway.
38. Nobody mentioned the word "rush" yet.
39. The word "path" was not capitalized.
40. The word "flow" was not stressed.
41. Please say the word "like" now.
42. We'll use the word "come" later.
43. The word "sure" is often abused.
44. The word "call" is not appropriate.
45. Is the word "mean" a verb?
46. Put the word "gone" into French.
47. The word "mind" is a cue.
48. The word "main" doesn't sound right.

49. Forget the word "port" just mentioned.
50. Repeat the word "belt" after me.
51. A word like "seed" was unmarked.
52. Spell the word "bark," will you?
53. Bear the word "back" in mind.
54. Should the word "good" be included?
55. You guessed the word "face" right.
56. He chose the word "wide" instead.
57. Why not use the word "sing?"
58. Please cross out the word "hour."
59. The term "poor" needs a definition.
60. The word "sent" wasn't big enough.
61. Just cross the word "nose" out.
62. Why isn't the word "cool" right?
63. The word "down" is the key.
64. The word "look" is not new.
65. She doesn't like the word "late."
66. How to spell the word "meet?"
67. Does the word "rock" make sense?
68. Is the word "soil" so meaningful?
69. Do you understand the word "camp?"
70. what is the word before "lake?"
71. Please say the word "name" again.
72. Put down the word "form" here.
73. Is the word "sick" a noun?
74. Should the word "wash" be used?

75. The word "wish" is very useful.
76. The word "case" wasn't his choice.
77. What does the word "bell" mean?
78. Why is the word "weak" incorrect?
79. What's equivalent to the word "hard?"
80. Who first got the word "fire?"

Test 1: For the Recall

1. Did you copy the word "_____?"
2. What do you mean by "_____?"
3. Pay attention to the word "_____."
4. He didn't notice the word "_____."
5. The word "_____" fits the case.
6. The word "_____" could be wrong.
7. Please stop using the word "_____."
8. Just think of the word "_____."
9. The meaning of "_____" is clear.
10. Say the word "_____" loudly, please.
11. What is the opposite of "_____."
12. John referred to the word "_____."
13. Listen to the word "_____" carefully.
14. How was the word "_____" selected?
15. The word "_____" must be underlined.
16. Please say "_____" one more time.
17. Look up the word "_____" please.
18. He heard the word "_____" later.

19. Who wrote the word "_____" first?
20. We'll use the word "_____" regardless.
21. Did you say "_____" just now?
22. Write the word "_____" down now.
23. The word "_____" is often used.
24. The word "_____" hasn't been found.
25. I'm familiar with the word "_____."
26. Bob told me the word "_____."
27. Let's put the word "_____" aside.
28. You mean the word "_____, " right?
29. A word like "_____" is important.
30. A word like "_____" is missing.
31. Does the word "_____" sound new?
32. The dictionary says "_____" was misspelled.
33. The word "_____" sounds very familiar.
34. The word "_____" did not appear.
35. How to define the word "_____?"
36. We did quote the word "_____."
37. She prefers the word "_____" anyway.
38. Nobody mentioned the word "_____" yet.
39. The word "_____" was not capitalized.
40. The word "_____" was not stressed.
41. Please say the word "_____" now.
42. We'll use the word "_____" later.
43. The word "_____" is often abused.
44. The word "_____" is not appropriate.

45. Is the word "_____" a verb?
46. Put the word "_____" into French.
47. The word "_____" is a cue.
48. The word "_____" doesn't sound right.
49. Forget the word "_____" just mentioned.
50. Repeat the word "_____" after me.
51. A word like "_____" was unmarked.
52. Spell the word "_____" will you?
53. Bear the word "_____" in mind.
54. Should the word "_____" be included?
55. You guessed the word "_____" right.
56. He chose the word "_____" instead.
57. Why not use the word "_____?"
58. Please cross out the word "_____."
59. The term "_____" needs a definition.
60. The word "_____" wasn't big enough.
61. Just cross the word "_____" out.
62. Why isn't the word "_____" right?
63. The word "_____" is the key.
64. The word "_____" is not new.
65. She doesn't like the word "_____."
66. How to spell the word "_____?"
67. Does the word "_____" make sense?
68. Is the word "_____" so meaningful?
69. Do you understand the word "_____?"
70. What is the word before "_____?"

71. Please say the word "_____" again.
72. Put down the word "_____" here.
73. Is the word "_____" a noun?
74. Should the word "_____" be used?
75. The word "_____" is very useful.
76. The word "_____" wasn't his choice.
77. What does the word "_____" mean?
78. Why is the word "_____" incorrect?
79. What's the equivalent to the word "_____?"
80. Who first got the word "_____?"

Test 3: For the Recall

1. Did you copy the word "()ail?"
2. What do you mean by "()ote?"
3. Pay attention to the word "()and."
4. He didn't notice the word "()lay."
5. The word "()ust" fits the case.
6. The word "()est" could be wrong.
7. Please stop using the word "()ite."
8. Just think of the word "()arm."
9. The meaning of "()air" is clear.
10. Say the word "()ass" loudly, please.
11. What is the opposite of "()ull?"
12. John referred to the word "()lue."
13. Listen to the word "()ice" carefully.
14. How was the word "()ile" selected?

15. The word "()ost" must be underlined.
16. Please say "()ast" one more time.
17. Look up the word "()eal," please.
18. He heard the word "()old" later.
19. Who wrote the word "()ead" first?
20. We'll use the word "()ope" regardless.
21. Did you say "()oon" just now?
22. Write the word "()ess" down now.
23. The word "()ver" is often used.
24. The word "()ays" hasn't been found.
25. I'm familiar with the word "()ill."
26. Bob told me the word "()oat."
27. Let's put the word "()ant" aside.
28. You mean the word "()ive," right?
29. A word like "()nto" is important.
30. A word like "()ine" is missing.
31. Does the word "()ink" sound new?
32. The dictionary says "()alm" was misspelled.
33. The word "()eep" sounds very familiar.
34. The word "()ear" did not appear.
35. How to define the word "()eat?"
36. We did quote the word "()orn."
37. She prefers the word "()oes" anyway.
38. Nobody mentioned the word "()ush" yet.
39. The word "()ath" was not capitalized.
40. The word "()low" was not stressed.

41. Please say the word "()ike" now.
42. We'll use the word "()ome" later.
43. The word "()ure" is often abused.
44. The word "()all" is not appropriate.
45. Is the word "()ean" a verb?
46. Put the word "()one" into French.
47. The word "()ind" is a cue.
48. The word "()ain" doesn't sound right.
49. Forget the word "()ort" just mentioned.
50. Repeat the word "()elt" after me.
51. A word like "()eed" was unmarked.
52. Spell the word "()ark," will you?
53. Bear the word "()ack" in mind.
54. Should the word "()ood" be included?
55. You guessed the word "()ace" right.
56. He chose the word "()ide" instead.
57. Why not use the word "()ing?"
58. Please cross out the word "()our."
59. The term "()oor" needs a definition.
60. The word "()ent" wasn't big enough.
61. Just cross the word "()ose" out.
62. Why isn't the word "()ool" right?
63. The word "()own" is the key.
64. The word "()ook" is not new.
65. She doesn't like the word "()ate."
66. How to spell the word "()eet?"

67. Does the word "()ock" make sense?
68. Is the word "()oil" so meaningful?
69. Do you understand the word "()amp?"
70. What is the word before "()ake?"
71. Please say the word "()ame" again.
72. Put down the word "()orm" here.
73. Is the word "()ick" a noun?
74. Should the word "()ash" be used?
75. The word "()ish" is very useful.
76. The word "()ase" wasn't his choice.
77. What does the word "()ell" mean?
78. Why is the word "()eak" incorrect?
79. What's equivalent to the word "()ard?"
80. Who first got the word "()ire?"

Tests 2 and 4: For the Reading

1. Jan sent the letter by mail.
2. Kids are too young to vote.
3. These products were made by hand.
4. What roles did your sister play?
5. Don't throw dust in our eyes.
6. Birds always nest on this tree.
7. His bark's worse than his bite.
8. Drinking clean water causes no harm.
9. That's a good pair of shoes.
10. Did he not pass the examination?

11. I've eaten a lot; I'm full.
12. John referred to the color blue.
13. Be good boys and nice girls.
14. These stations are one mile apart.
15. These books cost me fifty dollars.
16. West or east, home's the best.
17. Phil's very easy to deal with.
18. All the tickets were sold out.
19. Actually, Latin is a dead language.
20. "Are we late?" "I hope not."
21. Finish it as soon as possible.
22. They're more or less the same.
23. Have you ever been to Alaska?
24. He works days and studies nights.
25. I've an application form to fill.
26. It's cold. Put on your coat.
27. We're rather weak, we want help.
28. A normal hand has five fingers.
29. The pen slipped onto the floor.
30. This book isn't mine, it's his.
31. We will try, sink or swim.
32. Despair makes a calm death difficult.
33. They always keep their own promises.
34. In which year was Jack born?
35. She's vegetarian; she eats no meat.
36. They plant wheat, bean, and corn.

37. Don't step on my toes, please.
38. Let us avoid the rush hours.
39. This beaten path won't lead anywhere.
40. These rivers flow into the sea.
41. Take it -- if you like it.
42. What goes up will come down.
43. He is sure John came once.
44. New situations call for new solutions.
45. A little may mean a lot.
46. It's past and gone. Forget it.
47. Do you mind my smoking here?
48. Listen for main ideas, not details.
49. That ship in port looks foreign.
50. Fasten your seat belt while driving.
51. Farmers sow the seed in spring.
52. The dog doesn't bark very often.
53. He is walking back and forth.
54. They're really very good at math.
55. Reality is reality. Let's face it.
56. The doors would be wide open.
57. They love to dance and sing.
58. Sixty minutes just equals an hour.
59. Rich or poor, he's always unhappy.
60. Haven't they sent the message yet?
61. He's ahead by a nose only.
62. Calm down; keep a cool head.

63. Let's sit down for a rest.
64. Take a look at the picture.
65. Hurry up; otherwise we'll be late.
66. We can make both ends meet.
67. Do you like rock and roll?
68. They're preparing the soil for seed.
69. They stayed overnight in the camp.
70. There is no fish in this lake.
71. Is "Scott" your family name, sir?
72. Content should come first, form second.
73. Bob has been sick with flu.
74. Before meals we wash our hands.
75. We all wish you great successes.
76. In no case should anybody lie.
77. Nobody has heard the bell ring.
78. He's strong outwardly but weak inwardly.
79. They meant well; they tried hard.
80. Use stairways in case of fire.

Test 2: For the Recall

1. Jan sent the letter by _____.
2. Kids are too young to _____.
3. These products were made by _____.
4. What roles did your sister _____.
5. Don't throw _____ in our eyes.
6. Birds always _____ on this tree.

7. His bark's worse than his _____.
8. Drinking clean water causes no _____.
9. That's a good _____ of shoes.
10. Did he not _____ the examination?
11. I've eaten a lot; I'm _____.
12. John referred to the color _____.
13. Be good boys and _____ girls.
14. These stations are one _____ apart.
15. These books _____ me fifty dollars.
16. West or _____, home's the best.
17. Phil's very easy to _____ with.
18. All the tickets were _____ out.
19. Actually, Latin is a _____ language.
20. "Are we late?" "I _____ not."
21. Finish it as _____ as possible.
22. They're more or _____ the same.
23. Have you _____ been to Alaska?
24. He works _____ and studies nights.
25. I've an application form to _____.
26. It's cold. Put on your _____.
27. We're rather weak, we _____ help.
28. A normal hand has _____ fingers.
29. The pen slipped _____ the floor.
30. This book isn't _____, it's his.
31. We will try, _____ or swim.
32. Despair makes a _____ death difficult.

33. They always _____ their own promises.
34. In which _____ was Jack born?
35. She's vegetarian; she eats no _____.
36. They plant wheat, bean, and _____.
37. Don't step on my _____, please.
38. Let us avoid the _____ hours.
39. This beaten _____ won't lead anywhere.
40. These rivers _____ into the sea.
41. Take it -- if you _____ it.
42. What goes up will _____ down.
43. He is _____ John came once.
44. New situations _____ for new solutions.
45. A little may _____ a lot.
46. It's past and _____. Forget it.
47. Do you _____ my smoking here?
48. Listen for _____ ideas, not details.
49. That ship in _____ looks foreign.
50. Fasten your seat _____ while driving.
51. Farmers sow the _____ in spring.
52. The dog doesn't _____ very often.
53. He is walking _____ and forth.
54. They're really very _____ at math.
55. Reality is reality. Let's _____ it.
56. The doors would be _____ open.
57. They love to dance and _____.
58. Sixty minutes just equals an _____.

59. Rich or _____, he's always unhappy.
60. Haven't they _____ the message yet.
61. He's ahead by a _____ only.
62. Calm down; keep a _____ head.
63. Let's sit _____ for a rest.
64. Take a _____ at the picture.
65. Hurry up; otherwise we'll be _____.
66. We can make both ends _____.
67. Do you like _____ and roll?
68. They're preparing the _____ for seed.
69. They stayed overnight in the _____.
70. There is no fish in this _____.
71. Is "Scott" your family _____, sir?
72. Content should come first, _____ second.
73. Bob has been _____ with flu.
74. Before meals we _____ our hands.
75. We all _____ you great successes.
76. In no _____ should anybody lie.
77. Nobody has heard the _____ ring.
78. He's strong outwardly but _____ inwardly.
79. They meant well; they tried _____.
80. Use stairways in case of _____.

Test 4: For the Recall

1. Jan sent the letter by ()ail.
2. Kids are too young to ()ote.

3. These products were made by ()and.
4. What roles did your sister ()lay?
5. Don't throw ()ust in our eyes.
6. Birds always ()est on this tree.
7. His bark's worse than his ()ite.
8. Drinking clean water causes no ()arm.
9. That's a good ()air of shoes.
10. Did he not ()ass the examination?
11. I've eaten a lot; I'm ()ull.
12. John referred to the color ()lue.
13. Be good boys and ()ice girls.
14. These stations are one ()ile apart.
15. These books ()ost me fifty dollars.
16. West or ()ast, home's the best.
17. Phil's very easy to ()deal with.
18. All the tickets were ()old out.
19. Actually, Latin is a ()ead language.
20. "Are we late?" "I ()ope not."
21. Finish it as ()oon as possible.
22. They're more or ()ess the same.
23. Have you ()ver been to Alaska?
24. He works ()ays and studies nights.
25. I've an application form to ()ill.
26. It's cold. Put on your ()oat.
27. We're rather weak, we ()ant help.
28. A normal hand has ()ive fingers.

29. The pen slipped ()nto the floor.
30. This book isn't ()ine, it's his.
31. We will try, ()ink or swim.
32. Despair makes a ()alm death difficult.
33. They always ()eep their own promises.
34. In which ()ear was Jack born?
35. She's vegetarian; she eats no ()eat.
36. They plant wheat, bean, and ()orn.
37. Don't step on my ()oes, please.
38. Let us avoid the ()ush hours.
39. This beaten ()ath won't lead anywhere.
40. These rivers ()low into the sea.
41. Take it -- if you ()ike it.
42. What goes up will ()ome down.
43. He is ()ure John came once.
44. New situations ()all for new solutions.
45. A little may ()ean a lot.
46. It's past and ()one. Forget it.
47. Do you ()ind my smoking here?
48. Listen for ()ain ideas, not details.
49. That ship in ()ort looks foreign.
50. Fasten your seat ()elt while driving.
51. Farmers sow the ()eed in spring.
52. The dog doesn't ()ark very often.
53. He is walking ()ack and forth.
54. They're really very ()ood at math.

55. Reality is reality. Let's ()ace it.
56. The doors would be ()ide open.
57. They love to dance and ()ing.
58. Sixty minutes just equals an ()our.
59. Rich or ()oor, he's always unhappy.
60. Haven't they ()ent the message yet?
61. He's ahead by a ()ose only.
62. Calm down; keep a ()ool head.
63. Let's sit ()own for a rest.
64. Take a ()ook at the picture.
65. Hurry up; otherwise we'll be ()ate.
66. We can make both ends ()eet.
67. Do you like ()ock and roll?
68. They're preparing the ()oil for seed.
69. They stayed overnight in the ()amp.
70. There is no fish in this ()ake.
71. Is "Scott" your family ()ame, sir?
72. Content should come first, ()orm second.
73. Bob has been ()ick with flu.
74. Before meals we ()ash our hands.
75. We all ()ish you great successes.
76. In no ()ase should anybody lie.
77. Nobody has heard the ()ell ring.
78. He's strong outwardly but ()eak inwardly.
79. They meant well; they tried ()ard.
80. Use stairways in case of ()ire.

Test 5: For both the Cloze and Recall Test

1. Did you copy the word "()ail?"
2. What do you mean by "()ote?"
3. Pay attention to the word "()and."
4. He didn't notice the word "()lay."
5. The word "()ust" fits the case.
6. The word "()est" could be wrong.
7. Please stop using the word "()ite."
8. Just think of the word "()arm."
9. The meaning of "()air" is clear.
10. Say the word "()ass" loudly, please.
11. What is the opposite of "()ull?"
12. John referred to the word "()lue."
13. Listen to the word "()ice" carefully.
14. How was the word "()ile" selected?
15. The word "()ost" must be underlined.
16. Please say "()ast" one more time.
17. Look up the word "()eal," please.
18. He heard the word "()old" later.
19. Who wrote the word "()ead" first?
20. We'll use the word "()ope" regardless.
21. Did you say "()oon" just now?
22. Write the word "()ess" down now.
23. The word "()ver" is often used.
24. The word "()ays" hasn't been found.

25. I'm familiar with the word "()ill."
26. Bob told me the word "()oat."
27. Let's put the word "()ant" aside.
28. You mean the word "()ive," right?
29. A word like "()nto" is important.
30. A word like "()ine" is missing.
31. Does the word "()ink" sound new?
32. The dictionary says "()alm" was misspelled.
33. The word "()eep" sounds very familiar.
34. The word "()ear" did not appear.
35. How to define the word "()eat?"
36. We did quote the word "()orn."
37. She prefers the word "()oes" anyway.
38. Nobody mentioned the word "()ush" yet.
39. The word "()ath" was not capitalized.
40. The word "()low" was not stressed.
41. Please say the word "()ike" now.
42. We'll use the word "()ome" later.
43. The word "()ure" is often abused.
44. The word "()all" is not appropriate.
45. Is the word "()ean" a verb?
46. Put the word "()one" into French.
47. The word "()ind" is a cue.
48. The word "()ain" doesn't sound right.
49. Forget the word "()ort" just mentioned.
50. Repeat the word "()elt" after me.

51. A word like "()eed" was unmarked.
52. Spell the word "()ark," will you?
53. Bear the word "()ack" in mind.
54. Should the word "()ood" be included?
55. You guessed the word "()ace" right.
56. He chose the word "()ide" instead.
57. Why not use the word "()ing?"
58. Please cross out the word "()our."
59. The term "()oor" needs a definition.
60. The word "()ent" wasn't big enough.
61. Just cross the word "()ose" out.
62. Why isn't the word "()ool" right?
63. The word "()own" is the key.
64. The word "()ook" is not new.
65. She doesn't like the word "()ate."
66. How to spell the word "()eet?"
67. Does the word "()ock" make sense?
68. Is the word "()oil" so meaningful?
69. Do you understand the word "()amp?"
70. What is the word before "()ake?"
71. Please say the word "()ame" again.
72. Put down the word "()orm" here.
73. Is the word "()ick" a noun?
74. Should the word "()ash" be used?
75. The word "()ish" is very useful.
76. The word "()ase" wasn't his choice.

77. What does the word "()ell" mean?
78. Why is the word "()eak" incorrect?
79. What's equivalent to the word "()ard?"
80. Who first got the word "()ire?"

Test 6: For both the Cloze and Recall Test

1. Jan sent the letter by ()ail.
2. Kids are too young to ()ote.
3. These products were made by ()and.
4. What roles did your sister ()lay?
5. Don't throw ()ust in our eyes.
6. Birds always ()est on this tree.
7. His bark's worse than his ()ite.
8. Drinking clean water causes no ()arm.
9. That's a good ()air of shoes.
10. Did he not ()ass the examination?
11. I've eaten a lot; I'm ()ull.
12. John referred to the color ()lue.
13. Be good boys and ()ice girls.
14. These stations are one ()ile apart.
15. These books ()ost me fifty dollars.
16. West or ()ast, home's the best.
17. Phil's very easy to ()eal with.
18. All the tickets were ()old out.
19. Actually, Latin is a ()ead language.
20. "Are we late?" "I ()ope not."

21. Finish it as ()oon as possible.
22. They're more or ()ess the same.
23. Have you ()ver been to Alaska?
24. He works ()ays and studies nights.
25. I've an application form to ()ill.
26. It's cold. Put on your ()oat.
27. We're rather weak, we ()ant help.
28. A normal hand has ()ive fingers.
29. The pen slipped ()nto the floor.
30. This book isn't ()ine, it's his.
31. We will try, ()ink or swim.
32. Despair makes a ()alm death difficult.
33. They always ()eep their own promises.
34. In which ()ear was Jack born?
35. She's vegetarian; she eats no ()eat.
36. They plant wheat, bean, and ()orn.
37. Don't step on my ()oes, please.
38. Let us avoid the ()ush hours.
39. This beaten ()ath won't lead anywhere.
40. These rivers ()low into the sea.
41. Take it -- if you ()ike it.
42. What goes up will ()ome down.
43. He is ()ure John came once.
44. New situations ()all for new solutions.
45. A little may ()ean a lot.
46. It's past and ()one. Forget it.

47. Do you ()ind my smoking here?
48. Listen for ()ain ideas, not details.
49. That ship in ()ort looks foreign.
50. Fasten your seat ()elt while driving.
51. Farmers sow the ()eed in spring.
52. The dog doesn't ()ark very often.
53. He is walking ()ack and forth.
54. They're really very ()ood at math.
55. Reality is reality. Let's ()ace it.
56. The doors would be ()ide open.
57. They love to dance and ()ing.
58. Sixty minutes just equals an ()our.
59. Rich or ()oor, he's always unhappy.
60. Haven't they ()ent the message yet.
61. He's ahead by a ()ose only.
62. Calm down; keep a ()ool head.
63. Let's sit ()own for a rest.
64. Take a ()ook at the picture.
65. Hurry up; otherwise we'll be ()ate.
66. We can make both ends ()eet.
67. Do you like ()ock and roll?
68. They're preparing the ()oil for seed.
69. They stayed overnight in the ()amp.
70. There is no fish in this ()ake.
71. Is "Scott" your family ()ame, sir?
72. Content should come first, ()orm second.

73. Bob has been ()ick with flu.
74. Before meals we ()ash our hands.
75. We all ()ish you great successes.
76. In no ()ase should anybody lie.
77. Nobody has heard the ()ell ring.
78. He's strong outwardly but ()eak inwardly.
79. They meant well; they tried ()ard.
80. Use stairways in case of ()ire.

APPENDIX D

Test Directions

This study consists of a series of tests. However, what they test is not your ability or intelligence, but a theory. The theory is about the effect of language on information processing. For this reason, you do **not** have to put down your name on the paper. Therefore, no one will be able to identify your response with you personally.

The test will last about one hour. It is not an easy test. So, your cooperation is of prime significance to the results of this study. We would like to express our sincere appreciation of your time and effort.

Anyone who wants to know the results of this study can, six months later, contact with Prof. Ahrendt of the Educational Foundations Department, OSU, OR 97331.

APPENDIX E

Answer Sheet (Please print your answers.)

No. _____

1. _____	28. _____	55. _____
2. _____	29. _____	56. _____
3. _____	30. _____	57. _____
4. _____	31. _____	58. _____
5. _____	32. _____	59. _____
6. _____	33. _____	60. _____
7. _____	34. _____	61. _____
8. _____	35. _____	62. _____
9. _____	36. _____	63. _____
10. _____	37. _____	64. _____
11. _____	38. _____	65. _____
12. _____	39. _____	66. _____
13. _____	40. _____	67. _____
14. _____	41. _____	68. _____
15. _____	42. _____	69. _____
16. _____	43. _____	70. _____
17. _____	44. _____	71. _____
18. _____	45. _____	72. _____
19. _____	46. _____	73. _____
20. _____	47. _____	74. _____
21. _____	48. _____	75. _____
22. _____	49. _____	76. _____
23. _____	50. _____	77. _____
24. _____	51. _____	78. _____
25. _____	52. _____	79. _____
26. _____	53. _____	80. _____
27. _____	54. _____	THANK YOU!!!

APPENDIX F

Evaluation

No. _____

To help us to evaluate the study, please rate the degree of difficulty of the test on a 9-point scale, where 1 indicates that you feel it was **very difficult** to recall, or remember, the 80 items in the test as a whole, 5 indicates that the test was **moderately easy**, and 9, **very easy**.

(1)	2	3	4	(5)	6	7	8	(9)
↑				↑				↑
very difficult				moderately easy				very easy

My rating is: (please circle one and **only one** figure.)

1 2 3 4 5 6 7 8 9

To help us to have a better idea of the results of the study, please provide some information about yourself--

Sex: ___ male; ___ female.

Age: ___ years ___ months.

Major: _____.

Native Language: _____.

Years of learning English as a Second Language: _____.

Years of living in English-Speaking countries: _____.

APPENDIX G

Mean Scores for Recall for the Slot Openness X Test TypeInteraction: