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PROGRESIVE REPORT OF THE FIRST-YEAR PROJECT OF
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Implicit Measures of the Orthographic Deformation of Chinese Characters Following Prolonged Visual Inspection

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Abstract

The phenomenon of orthographic deformation is identified as the apparent deformation of a Chinese character following a prolonged visual inspection of the character, which is frequently accompanied by a subjective feeling of uncertainty about the correctness of the character in writing. This phenomenon is said to occur as a result of stimulus satiation produced by prolonged inspection of the character and appears to be specific to Chinese logographical scripts only but not to alphabetical scripts. The purpose of the present research project is to explore the mechanism underlying the orthographic deformation through a period of two-year research. The first-year project is to explore a desirable implicit or indirect measure of orthographic deformation whereby the orthographic deformation can be detected objectively and indirectly, without committing the shortcomings of self-reports. In the second-year project, experiments will be conducted to explore the mechanism underlying the orthographic deformation by investigating how the speed of orthographic deformation of characters is affected by features of the characters to be inspected such as morphological structure, frequency of occurrence, complexity, phonological similarity of a character and its sound radical, semantic similarity of a character and its meaning radical, and so on.

Key Words: Orthogonal Deformation, Stimulus Deformation, Chinese Character Processing, Metacognition, Implicit Measure

Implicit measures of the Orthographic Deformation of Chinese Characters Following Prolonged Visual Inspection

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Most native users of the Chinese writing system have experienced the phenomenon of orthographic deformation, which is defined as the apparent deformation of a Chinese character accompanied by a subjective feeling of uncertainty about the correctness of the character in writing following a prolonged visual inspection of the character. For example, when one is exposed the well-known character 的 for recognition, one can automatically recognize the character and admit its components or constituent radicals. However, when one keeps looking at the character for a certain period of time, one then begins to suspect if the character is legally composed of the radicals 白 and 勺. This phenomenon is said to occur as a result of stimulus satiation produced by prolonged inspection of a character. This phenomenon appears to be specific to Chinese logographical scripts only but not to alphabetical scripts because such phenomenon has seldom been reported in the Western journals of psychology.

Cheng and Wu (1994) have explored this phenomenon by using a direct test. On each trial, participants were presented a target Chinese character for continuing inspection and they were required to push down a response button immediately at the time at which they experienced the deformation or disorganization of the target. The latency from the target onset to the response onset was timed and used to indicate the time for the occurrence of orthographic deformation. Results showed that the speed of orthographic deformation was a function of morphological structure, complexity, and frequency of occurrence of target characters. For example, the speed of orthographic deformation was faster when targets were compound characters consisting of two main radicals juxtaposed horizontally (such as 的、和, hereafter called *LH-characters*) or juxtaposed vertically（such as 吉、是, hereafter called *UD-characters*）than when they were isolated characters (such as 木、日, hereafter called *I-characters*）or characters with one radical surrounded by the other (such as 圈、回, hereafter called *S-characters*). However, the morphological structure, degree of complexity, and frequency of target characters produced significant interactions on the speed of orthographic deformation. For example, it was found that low frequency resulted in faster orthographic deformation than did high frequency for I-characters but the reverse was the case for compound characters such as the LH- or UD-characters. The

Morphological Structure × Degree of Complexity interaction was primarily resulted from a faster orthographic deformation for simple I-characters than for other types of characters of different degrees of complexity.

The orthographic deformation specific to logographical scripts but not to alphabetical scripts may have direct bearings on the morphological structure of Chinese characters. Ancient Chinese characters were designed to directly represent objects and events rather than to represent speech sounds. This is evidenced by the fact that the two Chinese orthographic categories of "pictograph of objects" （象形） and "denotation of events"（指事）were developed first, followed by the development of the other four categories of "ideograph" （會意）, "phonetic-logographic compound"（形聲）, "phonetic loan"（假借）, and "figurative extension of meaning"（轉注）. This trend of orthographic development also suggests that Chinese characters are evolved to represent speech sounds. Thus, it is estimated that about 80% of modern Chinese characters are phonetic-logographic compounds, with each of which consisting at least of two main radicals; one is believed to carry the sound of the character and the other is to carry the meanings of the character (Li, 1977). However, the modern Chinese characters have never been evolved from a logographical to a sound-based writing system for two main reasons. One is that the correspondence of the sound of a character to its sound radical is not rigid at all across characters. It is evidenced by the fact that there are four groups of characters that are visually-similar and phonologically-identical, visually-similar and phonologically-dissimilar, visually-dissimilar and phonologically-identical, and visually-dissimilar and phonologically-dissimilar. The second reason is that the modern Chinese characters are not composed of a fixed number of letters but composed of radicals arranged in certain conventional positions; most of which are themselves also legal characters having their own lexical entries in the mental lexicon.

The morphological structure of Chinese characters mentioned above suggests a possibility that the orthographic deformation in Chinese has to do with the hierarchical structure of the Chinese characters in the sense that a Chinese character is nested by other legal characters. It follows that a prolonged visual inspection of a character will provide the opportunity of separating its components or radicals from one another and of access to those lexical entries for the whole character and components or radicals. Thus, the activation of multiple lexical entries triggered by the same character stimulus would result in the deformation of the character accompanied by the feeling of illegal formation. In particular, a prolonged visual inspection of a character may result in one's tendency to pay attention to contrasting

the lexical meanings of the character with those of its radicals, which are by and large not congruent with one another. For example, the lexical meanings of the character 洞 (hole) cannot be directly inferred from the lexical meanings of its radicals 水 (water) and 同 (identical). The lexical meanings of the character 的 (of) are different from those of its radicals 白 (white) and 勺 (spoon) or their combinations. This lexical incongruity may be responsible for the occurrence of orthographic deformation.

The purpose of the present research project is to test this possibility and others through a period of two-year research.

First-Year Project: To Determine a Desirable Implicit Measure of Orthographic Deformation

General Framework

As mentioned, the phenomenon of orthographic deformation in Chinese has been explored by using a direct test based on self-reports (see Cheng & Wu, 1994). The current approach to metacognition (e.g., Metcalfe & Shimamura, 1994; Nelson & Narens, 1990) treats a person as a device being able to monitor and report her own cognition and feeling to a highly, if not perfectly, accurate and stable extent. This premises the argument for the modern use of self-reports in the investigation of human cognitive and affective constructs. However, the use of direct tests or self-reports to explore the phenomenon of orthographic deformation may not be desirable because self-reports are subjective, potentially unreliable, and susceptible to suggestion, expectation, and other artifacts. For this reason, the first-year project is designed to explore a desirable implicit or indirect measure of orthographic deformation whereby the orthographic deformation can be detected objectively and implicitly without committing the shortcomings of self-reports.

The approach taken in this project is to determine a desirable implicit measure within the framework of lexical decision. The lexical-decision paradigm in various arrangements necessarily involves lexical access and does not involve more than lexical access, so that the occurrence of orthographic deformation identified with this paradigm should be up to the level of lexical processing.

As shown in Cheng and Wu (1994), both LH- and UD-characters were the easiest ones to suffer orthographic deformation among others so that these types of characters would be used as target characters for determining a desirable measure of orthographic deformation.

Experiment 1

Method. Stimuli were 30 lists of 15 two-character words and 15 two-character pseudowords (illegal words), with the words and pseudowords in each list sharing the first constituent character. The lists will be selected from the Liu, Chuang, and Wang corpus of frequency (1975). The words and pseudowords in each list will be randomly permuted to determine their positions in the list for presentation and then fixed across participants. The 30 lists are termed *same-character* lists and are grouped into two blocks of 15 lists. Another 30 lists of 15 two-character words and 15 two-character pseudowords are also prepared, which are generated by regrouping the word and pseudoword items in the 30 same-character lists such that none of the items in a list shares the same first character with the others in the list. These lists are termed as *different-character* lists and are also grouped into two blocks of 30 lists.

The experiment is carried out in a completely within-participant design, with each participant being tested individually. The participant is first given the instruction for the task and is then given 20 trials for practice. The practice is then followed by an experimental session in which one block of 15 same-character lists and one block of 15 different-character lists are presented for each participant. The presentation of the 30 lists were randomly permuted, with the items in each list are presented one by one for lexical judgment. For each list, the participant is first required to focus attention to the fixation point immediately upon receiving an auditory warning signal. The fixation point is exposed for two seconds and then is replaced by a target item. Upon receiving the target, the participant is to judge as quickly as possible whether or not the target was a legal word by pressing a response key if the target was a legal word and pressing another key if it was illegal. The participant is timed from the onset of the target to the response onset. Each target is kept exposed on the monitor until the participant pressed a response key, and its termination is immediately replaced by the onset of a succeeding word. This procedure continues until the last item of a list has been judged.

The assignment of the two blocks of same-character lists and those of different-character lists to the study blocks is rotated across the participants and the sequence of block presentation is balanced across participants.

Expected results. In the present experiment, a prolonged visual inspection of a Chinese character is induced by presenting words and pseudowords in the 30 lists one

by one and list by list for lexical judgments. Such procedure would allow the same first character of the words and pseudowords in a similar-character list to be repeatedly exposed as the stimuli in the list were presented for lexical judgments. On the other hand, none the words and pseudowords in a different-character list shares the first character with the others so that none of them was repeatedly presented for inspection and, hence, under prolonged inspection. Thus, it is expected that the repeated presentation of the first constituent character of the items in the same-character lists would result in the orthographic deformation of the character reflected by a longer lexical decision time or lower degree of accuracy for judging both words and pseudowords in the same-character lists than for judging their counterparts in the different-character lists. It is also expected that the difference in lexical decision time between pseudowords and words would be larger for the same-character than for the different-character lists.

Experiment 2

Method. It is likely that the presentation of the stimuli in the same-character lists in Experiment 1 may not result in the orthographic deformation of characters repeatedly presented for prolonged inspection. As the task of lexical judgment can possibly be well performed simply based on phonological information about targets to be lexically judged, without consulting their visual information, the presentation of the words and pseudowords in the same-character lists may not be appropriate for the production of orthographic deformation. The method for exploring an alternative measure of orthographic deformation in Experiment 2 is the same as used in Experiment 1 except that the pseudowords presented for lexical judgments are homophonic two-character pseudowords. For example, the pseudowords 退手, 退必, 退話, and 退初 are phonologically identical to the words 退守, 退避, 退化, and 退出, respectively. Such homophonic pseudowords will be generated and mixed with their legal counterparts and presented to participants for lexical judgments. In Experiment 2, participants cannot make lexical judgments to the target homophonic pseudowords and their legal counterparts based on phonological information about the targets because both the words and the pseudowords are phonologically legal and meaningful. They can only perform the task based on visual information about the targets. It is therefore expected that participants would produce orthographic deformation for the first characters of items in the same-character lists as result of their repeated presentations during lexical judgment.

Expected results. Expected results are the same as mentioned in Experiment 1.

Table 1.
A Matrix of Two-Character Words and their Homophonic Pseudoword Counterparts Presented for Lexical Decision

	退迴	退必	退為	退便
退後	退巢	退變	退出	退守
退化	退初	退話	退厚	退訓
退回	退手	退休	退嗦	退舞
退修	退訊	退潮	退學	退位
退穴	退縮	退易	退伍	退役

Experiment 3

Method. The method for Experiment 3 is the same as used in Experiment 2 except that the words and their homophonic pseudoword counterparts in either a same-character or a different-character list used in Experiment 2 are randomly arranged in a matrix such as the one shown in Table 1. Participants are required to make lexical judgment to each target in each cell and the lexical decision time across all the words and pseudowords in the matrix is collected for analysis. The occurrence of orthographic deformation will be evidenced by a longer decision time for same-character than for different-character matrices because the lexical decision time would be longer for words and/or pseudowords in the same-character matrices, in each of which the first character of the items is repeatedly presented and continuously inspected, than for those in the different-character matrix, in each of which none of items shares the same character with the others.

Experiment 4

Other potential implicit measures of orthographic deformation will also be explored in the first-year project.

Second-Year Project: The Mechanism Underlying the Orthographic Deformation

General Framework

Experiments for exploring the mechanism underlying the orthographic deformation cannot be described in detail unless the implicit measure of orthographic deformation has been developed in the first-year project. However, four or five

experiments will be conducted to explore the mechanism by investigating how the speed of orthographic deformation is affected by features of target characters to be inspected such as morphological structure, frequency of occurrence, complexity, phonological similarity of a character and its sound radical, semantic similarity of a character and its meaning radical, and so on.

For example, if the implicit measure of orthographic deformation investigated in Experiment 2 is empirically verified as desirable, then two-character words and their homophonic pseudoword counterparts in same-character and different-character lists will be prepared as stimuli for lexical judgment. The morphological structure of target characters (i.e., the first constituent character of the word stimuli) will be systematically varied at four levels: LH-character, UD-character, I-character, and S-character. Thus, it is expected that the occurrence of orthographic deformation would result in a longer lexical decision time or lower degree of accuracy for judging both words and pseudowords in the same-character lists than for judging their counterparts in the different-character lists. It is also expected that the difference in lexical decision time between pseudowords and words would be larger for the same-character than for the different-character lists. The frequency of occurrence and complexity of target characters, the phonological similarity of a target character and its sound radical, and the semantic similarity of a target and its semantic radical will also be systematically varied in factorial experiments with repeated measure. Lexical decision time under each condition will be collected for analyses.

References

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Experiment 1

Method

Participants. Forty university students participated in the experiment.

Material. Stimuli were 20 lists of 10 two-character words and 10 two-character pseudowords (illegal words), with the words and pseudowords in each list sharing the same first constituent character. These lists were termed as same-character lists. Another 20 lists of 15 words and 15 pseudowords were also prepared, which were generated by regrouping the words and pseudoword items in the 20 same-character lists such that none of the items shared the same first character with the others in the list. These lists were termed as different-character lists. The 20 same-character lists and 20 different-character lists were divided into two blocks.

Procedure. The experiment was carried out in a completely within-participant design, with each participant being tested individually. The participants were first given the instruction for the task and then given 6 trials for practice. The practice is then followed by an experimental session in which 10 same-character lists and 10 different-character lists are presented for each participant. Half of the participants did the same-character lists first and half of the participants did the different-character lists first. The items in each list were presented one by one for lexical judgment. Upon receiving the target, the participant was asked to judge as **quickly** as possible if the target was a legal word by pressing one response key (right Shift) if the target was a legal word and pressing another key (left Shift) if it was illegal. The participant is timed from the onset of the target to the response onset. Each target was kept exposed on the monitor until the participant pressed a response key, and after 3000 ms of ISI, replaced by the onset of a succeeding word and a auditory warning signal (Ding). The procedure continued for 5 lists (100 trials) had been judged. Then the participants were required to rest before the next session.

The word sequence in each list were balanced by Latin-square across participants.

Results.

剔除錯誤判斷的反應後，以 2（字首同異）×20（出現順序）二因子 ANOVA 分析詞彙判斷的反應時間及正確率，並分別將「詞」與「非詞」的結果分開分析。

「詞」的結果：在反應時間上，字首的異同效果未達顯著水準，順序效果達到顯著且交互作用達到顯著，字首相同組的第一個詞彙之反應時間顯著長於其它的項目，這樣的結果可能是因為受試者在經歷了前二十個字首相同的字串之後，對於突然出現不同首字的項目反應較慢所致，結果報表參見附件。在反應正確率上，字首異同與順序效果均未達顯著，結果報表參見附件。

「非詞」的結果：在反應時間上，順序效果達到顯著，第一個出現的詞彙之判斷時間顯著長於其餘的詞彙，結果報表參見附件。在反應正確率上，字首異同效果與順序效果則未達顯著，結果報表參見附件。

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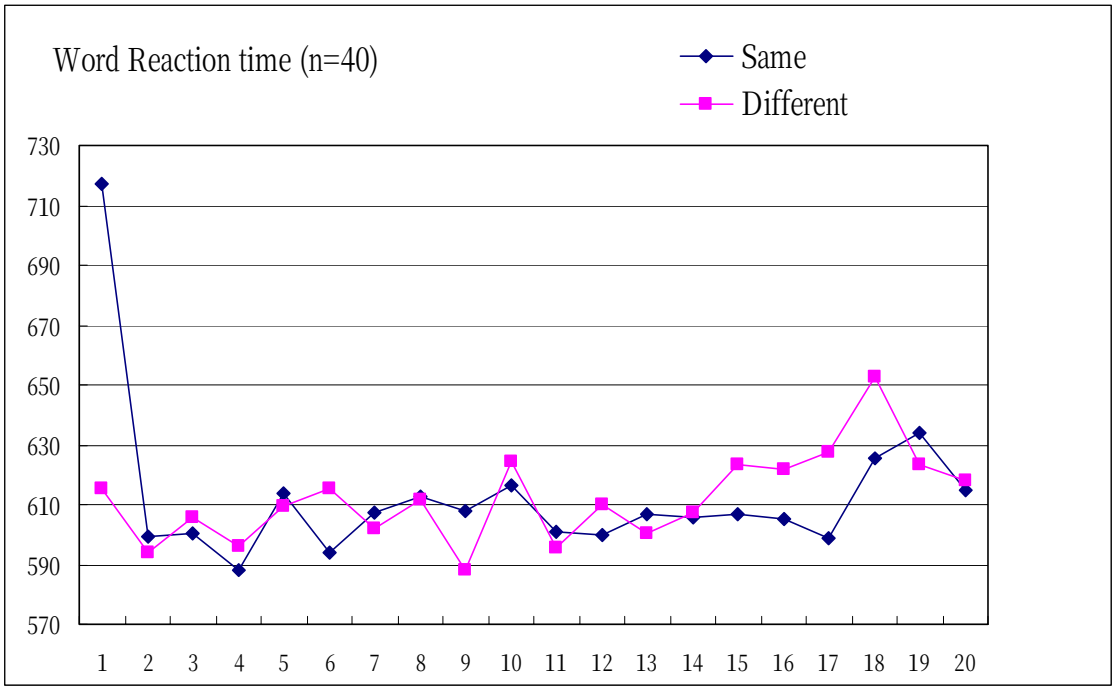
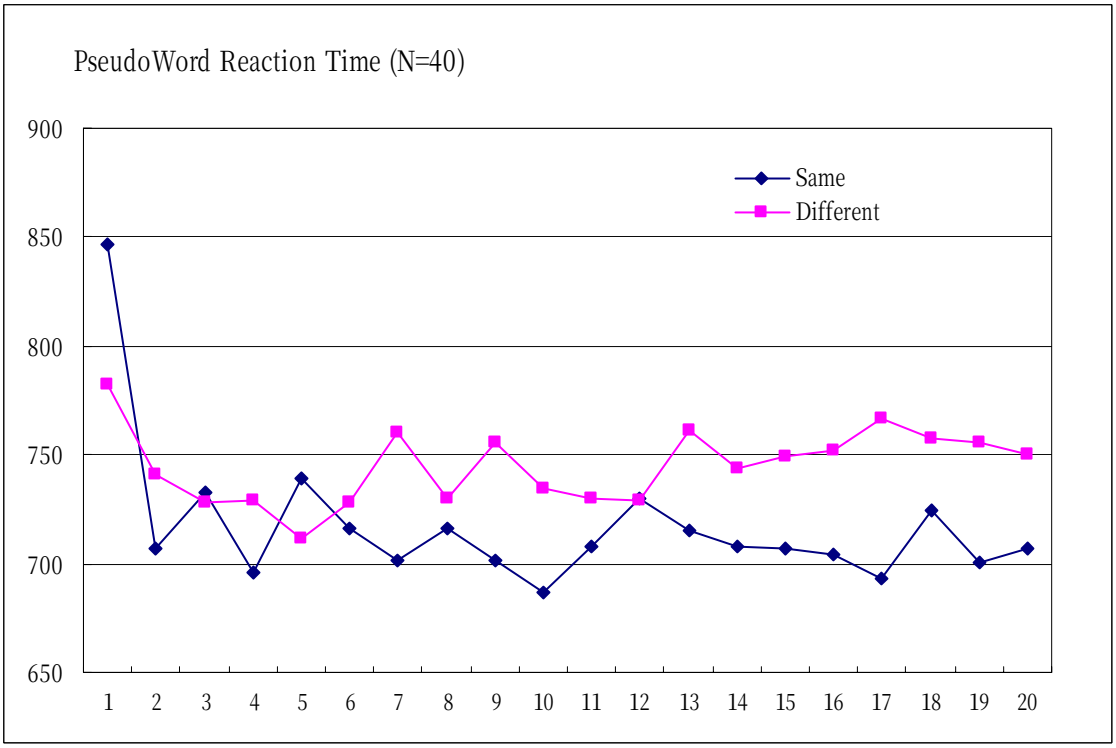
Exp. 1 (N=41)

Reaction Time

Word

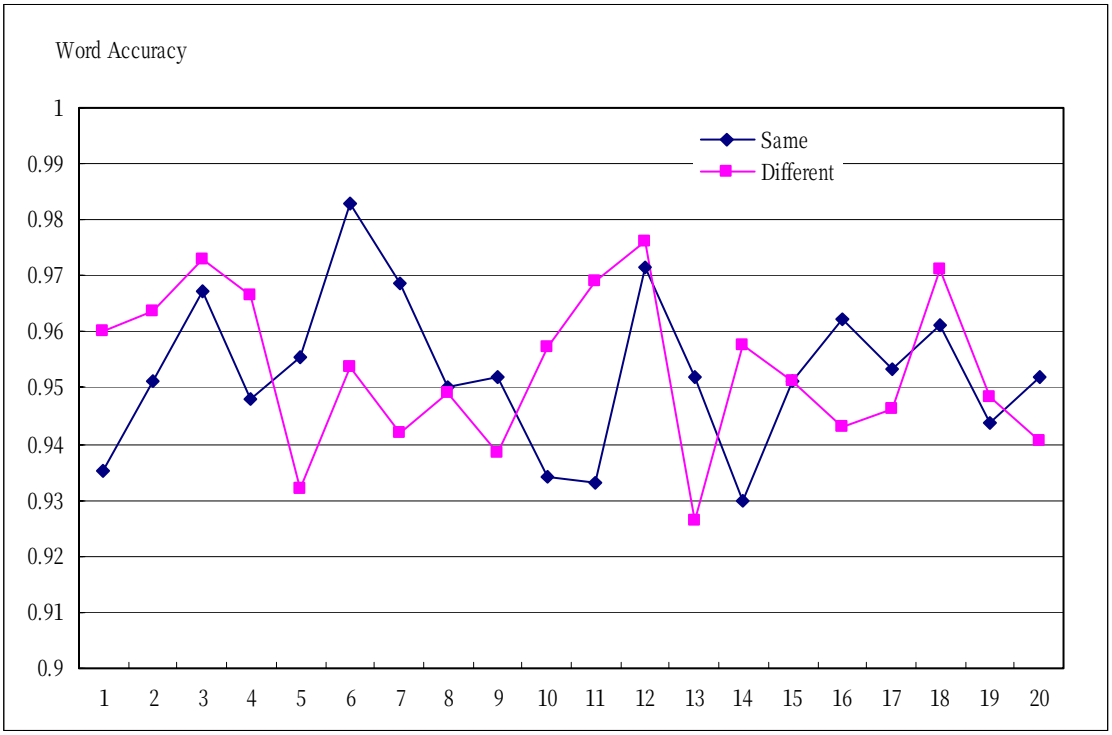


PseudoWord

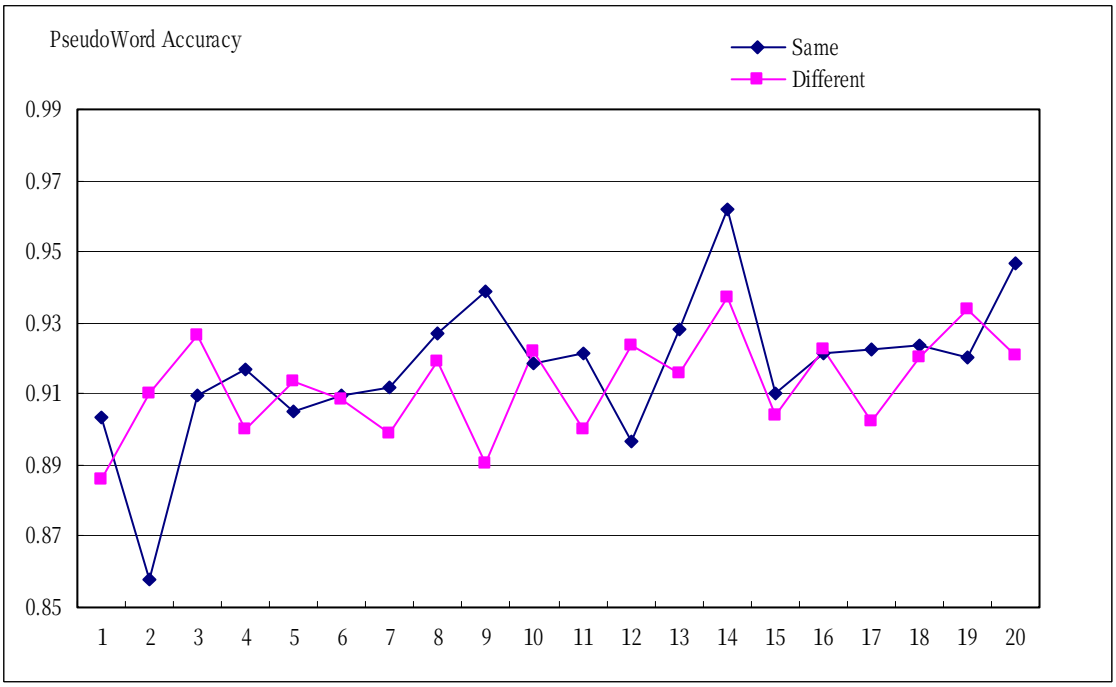


Accuracy

Word


Word Accuracy
Same
Different
1
0.99
0.98
0.97
0.96
0.95
0.94
0.93
0.92
0.91
0.9
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

PseudoWord


PseudoWord Accuracy
Same
Different
0.99
0.97
0.95
0.93
0.91
0.89
0.87
0.85
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

****
* General ANOVA Program *
* Vesion 3.0 *
* Chao-Ming Cheng & Shyue-Jyh Chern *
* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp1.med
Output Device : 1WMED.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 20
Levels of S : 40
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1= 611.086[105.503] A2= 612.127[109.217]

Means of Bj :

B1= 666.527[133.798] B2= 596.605[85.328]
B3= 603.087[99.273] B4= 592.178[75.010]

B5=	611.704[94.799]	B6=	595.849[121.951]
B7=	604.609[89.750]	B8=	612.017[110.383]
B9=	589.788[107.174]	B:=	620.408[102.618]
B11=	598.296[86.067]	B12=	604.780[83.893]
B13=	603.508[90.354]	B14=	606.624[89.102]
B15=	615.096[108.188]	B16=	613.476[91.699]
B17=	613.275[132.575]	B18=	639.108[166.646]
B19=	628.809[121.677]	B1:=	616.385[83.986]

Means of AiBj :

A1B1=	717.464[142.119]	A1B2=	599.156[89.629]
A1B3=	600.666[98.721]	A1B4=	588.119[77.684]
A1B5=	613.833[109.864]	A1B6=	576.228[130.264]
A1B7=	607.199[91.539]	A1B8=	612.455[115.948]
A1B9=	591.478[124.578]	A1B:=	616.555[102.950]
A1B11=	601.116[94.489]	A1B12=	599.779[78.628]
A1B13=	606.619[80.543]	A1B14=	605.833[85.566]
A1B15=	606.926[100.950]	A1B16=	605.422[76.576]
A1B17=	598.921[82.797]	A1B18=	625.288[120.546]
A1B19=	634.069[117.577]	A1B1:=	614.592[80.484]
A2B1=	615.591[102.064]	A2B2=	594.054[80.716]
A2B3=	605.509[99.764]	A2B4=	596.237[72.008]
A2B5=	609.574[76.776]	A2B6=	615.470[109.570]
A2B7=	602.019[87.848]	A2B8=	611.579[104.520]
A2B9=	588.099[86.296]	A2B:=	624.260[102.140]
A2B11=	595.476[76.624]	A2B12=	609.781[88.565]
A2B13=	600.396[99.102]	A2B14=	607.415[92.497]
A2B15=	623.265[114.390]	A2B16=	621.529[104.038]
A2B17=	627.630[166.988]	A2B18=	652.928[201.566]
A2B19=	623.550[125.423]	A2B1:=	618.178[87.311]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	7042823.978	39	180585.230		
A	433.632	1	433.632	0.037	0.6624

AS	454868.567	39	11663.297		
B	476004.057	19	25052.845	3.246	0.0000
BS	5719628.495	741	7718.797		
AB	290786.202	19	15304.537	2.541	0.0005
ABS	4463293.852	741	6023.339		

---

* means difference between row-mean & column-mean
come up 0.05 significant level.
** means difference between row-mean & column-mean
come up 0.01 significant level.

MsError = 7718.796890
df(MsError) = 741
# of groups = 20
cell in group = 80
q(741,20).05 = 5.010000
q(741,20).01 = 5.650000
C(.05) = 49.211606
C(.01) = 55.498119

Label	B1	B2	B3	B4	B5	B6	B7
Means	666.527	596.605	603.087	592.178	611.704	595.849	604.609

B1		**	**	**	*	**	**
B2							
B3							
B4							
B5							
B6							
B7							
B8							
B9							
B:							
B11							
B12							

B13 |
B14 |
B15 |
B16 |
B17 |
B18 |
B19 |
B1: |

Label	B8	B9	B:	B11	B12	B13	B14
Means	612.017	589.788	620.408	598.296	604.780	603.508	606.624

B1	*	**		**	**	**	**
B2							
B3							
B4							
B5							
B6							
B7							
B8							
B9							
B:							
B11							
B12							
B13							
B14							
B15							
B16							
B17							
B18		*					
B19							
B1:							

Label	B15	B16	B17	B18	B19	B1:
Means	615.096	613.476	613.275	639.108	628.809	616.385

B1	*	*	*			*
B2						

B3 |
B4 |
B5 |
B6 |
B7 |
B8 |
B9 |
B: |
B11 |
B12 |
B13 |
B14 |
B15 |
B16 |
B17 |
B18 |
B19 |
B1: |

Simple Simple-Main and Interaction Effects of AB.

Source	SS	df	MS	F	P
Error for B[A(i)]	10182922.347	1482	6871.068		
B[A(1)]	598516.279	19	31500.857	4.585	0.0000
B[A(2)]	168273.980	19	8856.525	1.289	0.1800
Error for A[B(j)]	4918162.419	780	6305.336		
A[B(1)]	207560.634	1	207560.634	32.918	0.0000
A[B(2)]	520.506	1	520.506	0.083	0.6886
A[B(3)]	469.117	1	469.117	0.074	0.6881
A[B(4)]	1317.917	1	1317.917	0.209	0.6376

A[B(5)]	362.763	1	362.763	0.058	0.6827
A[B(6)]	30798.299	1	30798.299	4.884	0.0257
A[B(7)]	536.726	1	536.726	0.085	0.6886
A[B(8)]	15.322	1	15.322	0.002	0.4752
A[B(9)]	228.285	1	228.285	0.036	0.6615
A[B(:)]	1187.263	1	1187.263	0.188	0.6489
A[B(;)]	636.277	1	636.277	0.101	0.6865
A[B(<)]	2001.200	1	2001.200	0.317	0.5771
A[B(=)]	774.483	1	774.483	0.123	0.6800
A[B(>)]	50.047	1	50.047	0.008	0.5522
A[B(?)]	5338.687	1	5338.687	0.847	0.3607
A[B(@)]	5188.467	1	5188.467	0.823	0.3679
A[B(A)]	16483.703	1	16483.703	2.614	0.1022
A[B(B)]	15280.083	1	15280.083	2.423	0.1158
A[B(C)]	2212.777	1	2212.777	0.351	0.5592
A[B(D)]	257.278	1	257.278	0.041	0.6681

Tukey Test for B[A(1)].

* means difference between row-mean & column-mean come up 0.05 significant level.

** means difference between row-mean & column-mean come up 0.01 significant level.

MsError = 6871.067711
df(MsError) = 1482
# of groups = 20
cell in group = 40
q(1482,20).05 = 5.010000
q(1482,20).01 = 5.650000
C(.05) = 65.662867
C(.01) = 74.050938

Label	A1B1	A1B2	A1B3	A1B4	A1B5	A1B6	A1B7
Means	717.464	599.156	600.666	588.119	613.833	576.228	607.199
A1B1		**	**	**	**	**	**
A1B2							

A1B3 |
A1B4 |
A1B5 |
A1B6 |
A1B7 |
A1B8 |
A1B9 |
A1B: |
A1B11 |
A1B12 |
A1B13 |
A1B14 |
A1B15 |
A1B16 |
A1B17 |
A1B18 |
A1B19 |
A1B1: |

Label	A1B8	A1B9	A1B:	A1B11	A1B12	A1B13	A1B14
Means	612.455	591.478	616.555	601.116	599.779	606.619	605.833
A1B1	**	**	**	**	**	**	**
A1B2							
A1B3							
A1B4							
A1B5							
A1B6							
A1B7							
A1B8							
A1B9							
A1B:							
A1B11							
A1B12							
A1B13							
A1B14							
A1B15							
A1B16							
A1B17							

A1B18 |
A1B19 |
A1B1: |

Label	A1B15	A1B16	A1B17	A1B18	A1B19	A1B1:
Means	606.926	605.422	598.921	625.288	634.069	614.592

A1B1 | ** ** ** ** ** **
A1B2 |
A1B3 |
A1B4 |
A1B5 |
A1B6 |
A1B7 |
A1B8 |
A1B9 |
A1B: |
A1B11 |
A1B12 |
A1B13 |
A1B14 |
A1B15 |
A1B16 |
A1B17 |
A1B18 |
A1B19 |
A1B1: |

****
* General ANOVA Program *
* Vesion 3.0 *
* Chao-Ming Cheng & Shyue-Jyh Chern *
* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp1.acc
Output Device : 1WACC.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 20
Levels of S : 40
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1=	0.953[	0.103]	A2=	0.953[	0.105]

Means of Bj :

B1=	0.948[	0.094]	B2=	0.957[	0.091]
B3=	0.970[	0.078]	B4=	0.957[	0.101]

B5=	0.944[	0.114]	B6=	0.968[	0.076]
B7=	0.955[	0.118]	B8=	0.950[	0.111]
B9=	0.945[	0.113]	B:=	0.946[	0.105]
B11=	0.951[	0.112]	B12=	0.974[	0.079]
B13=	0.939[	0.123]	B14=	0.944[	0.107]
B15=	0.951[	0.110]	B16=	0.953[	0.121]
B17=	0.950[	0.105]	B18=	0.966[	0.086]
B19=	0.946[	0.118]	B1:=	0.946[	0.092]

Means of AiBj :

A1B1=	0.935[	0.100]	A1B2=	0.951[	0.097]
A1B3=	0.967[	0.074]	A1B4=	0.948[	0.114]
A1B5=	0.956[	0.103]	A1B6=	0.983[	0.052]
A1B7=	0.969[	0.083]	A1B8=	0.950[	0.110]
A1B9=	0.952[	0.098]	A1B:=	0.934[	0.117]
A1B11=	0.933[	0.136]	A1B12=	0.972[	0.090]
A1B13=	0.952[	0.103]	A1B14=	0.930[	0.127]
A1B15=	0.951[	0.104]	A1B16=	0.962[	0.101]
A1B17=	0.954[	0.111]	A1B18=	0.961[	0.088]
A1B19=	0.944[	0.124]	A1B1:=	0.952[	0.085]
A2B1=	0.960[	0.085]	A2B2=	0.964[	0.084]
A2B3=	0.973[	0.082]	A2B4=	0.967[	0.085]
A2B5=	0.932[	0.124]	A2B6=	0.954[	0.091]
A2B7=	0.942[	0.144]	A2B8=	0.949[	0.113]
A2B9=	0.939[	0.126]	A2B:=	0.957[	0.090]
A2B11=	0.969[	0.077]	A2B12=	0.976[	0.065]
A2B13=	0.926[	0.138]	A2B14=	0.958[	0.081]
A2B15=	0.951[	0.116]	A2B16=	0.943[	0.137]
A2B17=	0.946[	0.099]	A2B18=	0.971[	0.082]
A2B19=	0.948[	0.113]	A2B1:=	0.940[	0.098]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	0.700	39	0.018		
A	0.000	1	0.000	0.010	0.5702

AS	0.344	39	0.009		
B	0.144	19	0.008	0.611	0.5215
BS	9.166	741	0.012		
AB	0.147	19	0.008	0.836	0.6465
ABS	6.876	741	0.009		

****
* General ANOVA Program *
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* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
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General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp1.med
Output Device : 1NWMED.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 20
Levels of S : 40
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1= 710.765[162.830] A2= 741.112[195.256]

Means of Bj :

B1= 814.384[296.127] B2= 715.207[184.490]
B3= 721.412[168.863] B4= 712.604[134.656]

B5= 725.419[153.316] B6= 722.310[147.500]
B7= 730.608[176.020] B8= 713.910[148.800]
B9= 719.970[177.022] B:= 701.638[201.432]
B11= 709.919[175.242] B12= 729.098[148.802]
B13= 729.598[194.257] B14= 717.137[180.401]
B15= 727.773[182.546] B16= 719.007[163.773]
B17= 729.805[163.610] B18= 740.605[155.429]
B19= 727.997[164.801] B1:= 710.368[202.800]

Means of AiBj :

A1B1= 846.280[280.989] A1B2= 689.189[158.170]
A1B3= 714.589[176.291] A1B4= 695.918[112.573]
A1B5= 738.982[170.085] A1B6= 716.579[128.328]
A1B7= 701.130[113.767] A1B8= 698.144[157.075]
A1B9= 684.297[157.364] A1B:= 687.202[118.497]
A1B11= 708.034[151.040] A1B12= 729.550[130.749]
A1B13= 697.706[172.157] A1B14= 690.464[182.153]
A1B15= 706.597[201.014] A1B16= 704.495[124.485]
A1B17= 692.804[98.454] A1B18= 724.049[144.457]
A1B19= 700.122[121.458] A1B1:= 689.170[182.505]
A2B1= 782.489[307.234] A2B2= 741.226[204.209]
A2B3= 728.235[160.805] A2B4= 729.290[151.773]
A2B5= 711.856[133.097] A2B6= 728.042[164.252]
A2B7= 760.085[217.451] A2B8= 729.676[138.250]
A2B9= 755.643[188.055] A2B:= 716.074[258.246]
A2B11= 711.805[196.468] A2B12= 728.646[164.889]
A2B13= 761.489[209.282] A2B14= 743.809[174.604]
A2B15= 748.949[159.194] A2B16= 733.519[194.230]
A2B17= 766.806[202.744] A2B18= 757.162[164.013]
A2B19= 755.872[194.969] A2B1:= 731.566[219.201]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	21686761.841	39	556070.816		
A	368374.039	1	368374.039	3.446	0.0676

AS	4168657.589	39	106888.656		
B	786226.253	19	41380.329	2.225	0.0023
BS	13783094.023	741	18600.667		
AB	439256.865	19	23118.782	1.579	0.0548
ABS	10846887.277	741	14638.174		

---

* means difference between row-mean & column-mean
come up 0.05 significant level.

** means difference between row-mean & column-mean
come up 0.01 significant level.

MsError = 18600.666698
df(MsError) = 741
# of groups = 20
cell in group = 80
q(741,20).05 = 5.010000
q(741,20).01 = 5.650000
C(.05) = 76.393602
C(.01) = 86.152465

Label	B1	B2	B3	B4	B5	B6	B7
Means	814.384	715.207	721.412	712.604	725.419	722.310	730.608

B1	**	**	**	**	**	*
B2						
B3						
B4						
B5						
B6						
B7						
B8						
B9						
B:						
B11						
B12						

B13 |
B14 |
B15 |
B16 |
B17 |
B18 |
B19 |
B1: |

Label	B8	B9	B:	B11	B12	B13	B14
Means	713.910	719.970	701.638	709.919	729.098	729.598	717.137
B1	**	**	**	**	*	*	**
B2							
B3							
B4							
B5							
B6							
B7							
B8							
B9							
B:							
B11							
B12							
B13							
B14							
B15							
B16							
B17							
B18							
B19							
B1:							

Label	B15	B16	B17	B18	B19	B1:
Means	727.773	719.007	729.805	740.605	727.997	710.368
B1	**	**	*		**	**
B2						

2005/5/30

B3 |

B4 |

B5 |

B6 |

B7 |

B8 |

B9 |

B: |

B11 |

B12 |

B13 |

B14 |

B15 |

B16 |

B17 |

B18 |

B19 |

B1: |

****
* General ANOVA Program *
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* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp1.acc
Output Device : 1NWACC.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 20
Levels of S : 40
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1= 0.910[0.170] A2= 0.908[0.162]

Means of Bj :

B1= 0.895[0.170] B2= 0.873[0.182]

B3=	0.907[	0.190]	B4=	0.909[	0.159]
B5=	0.909[	0.148]	B6=	0.909[	0.151]
B7=	0.906[	0.155]	B8=	0.911[	0.173]
B9=	0.903[	0.172]	B:=	0.909[	0.174]
B11=	0.899[	0.168]	B12=	0.910[	0.148]
B13=	0.910[	0.167]	B14=	0.937[	0.158]
B15=	0.907[	0.158]	B16=	0.910[	0.179]
B17=	0.912[	0.142]	B18=	0.922[	0.168]
B19=	0.927[	0.150]	B1:=	0.910[	0.193]

Means of AiBj :

A1B1=	0.903[	0.161]	A1B2=	0.836[	0.224]
A1B3=	0.887[	0.222]	A1B4=	0.917[	0.138]
A1B5=	0.905[	0.147]	A1B6=	0.910[	0.156]
A1B7=	0.912[	0.144]	A1B8=	0.904[	0.190]
A1B9=	0.915[	0.175]	A1B:=	0.918[	0.157]
A1B11=	0.921[	0.148]	A1B12=	0.897[	0.167]
A1B13=	0.905[	0.187]	A1B14=	0.938[	0.187]
A1B15=	0.910[	0.159]	A1B16=	0.921[	0.157]
A1B17=	0.923[	0.123]	A1B18=	0.924[	0.169]
A1B19=	0.920[	0.142]	A1B1:=	0.923[	0.184]
A2B1=	0.886[	0.178]	A2B2=	0.910[	0.117]
A2B3=	0.927[	0.147]	A2B4=	0.900[	0.178]
A2B5=	0.914[	0.148]	A2B6=	0.909[	0.146]
A2B7=	0.899[	0.165]	A2B8=	0.919[	0.154]
A2B9=	0.890[	0.169]	A2B:=	0.899[	0.188]
A2B11=	0.877[	0.184]	A2B12=	0.924[	0.124]
A2B13=	0.916[	0.145]	A2B14=	0.937[	0.122]
A2B15=	0.904[	0.158]	A2B16=	0.899[	0.197]
A2B17=	0.902[	0.157]	A2B18=	0.920[	0.166]
A2B19=	0.934[	0.157]	A2B1:=	0.898[	0.200]

Summary Table of ANOVA

Source	SS	df	MS	F	P

S	17.937	39	0.460		
A	0.001	1	0.001	0.025	0.6358
AS	1.138	39	0.029		
B	0.236	19	0.012	0.716	0.6791
BS	12.864	741	0.017		
AB	0.273	19	0.014	0.907	0.5723
ABS	11.740	741	0.016		

Experiment 2

Method.

Participants. Eleven university students participated in this study.

Material. Stimuli were 30 lists of 15 two-character words and 15 two-character pseudowords (illegal words), with the words and pseudowords in each list sharing the same first constituent character. The pseudowords are homophonic pseudowords like 收娶, 收盜, 收廳, 收沸 and 收伐 which are phonologically identical to the words 收取, 收到, 收聽, 收費, and 收發. Another 30 lists of 15 words and 15 pseudowords were also prepared, which were generated by regrouping the words and pseudoword items in the 30 same-character lists such that none of the items share the same first character with the others in the list. These lists are termed as different-character lists. The 30 same-character lists and 30 different-character lists were divided into two blocks.

Procedure. The experiment was carried out in a completely within-participant design, with each participant being tested individually. The participants were first given the instruction for the task and then given 20 trials for practice. The practice is then followed by an experimental session in which 15 same-character lists and 15 different-character lists are presented for each participant. The presentation of the 30 lists were randomly permuted, with the items in each list were presented one by one for lexical judgment. Upon receiving the target, the participant was asked to judge as **accurate** as possible whether or not the target was a legal word by pressing one response key (right Shift) if the target was a legal word and pressing another key (left Shift) if it was illegal. The participant is timed from the onset of the target to the response onset. Each target was kept exposed on the monitor until the participant pressed a response key, and its termination is immediately replaced by the onset of a succeeding word. The procedure continues for two lists (60 trials) had been judged. Then the participants were required to rest at least 35 seconds before prepare themselves ready for the succeeding lists.

The word sequence in each list were balanced by Latin-square across participants.

Results.

剔除錯誤判斷的反應後，以 2（字首同異）×20（出現順序）二因子 ANOVA 分析詞彙判斷的反應時間及正確率，並分別將「詞」與「非詞」的結果分開分析。

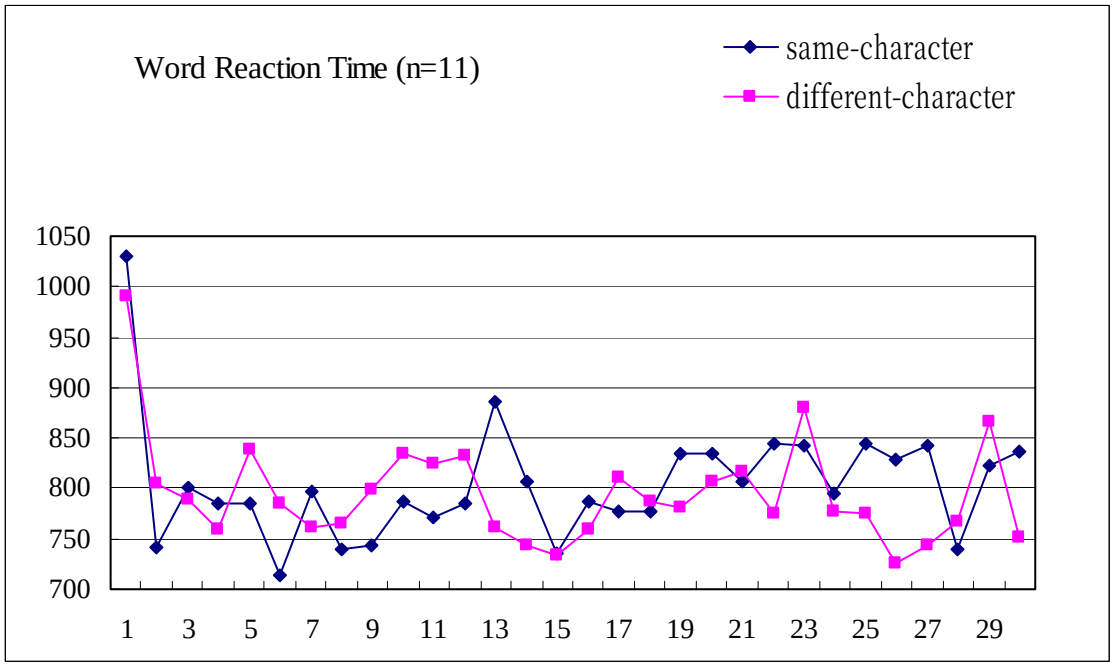
「詞」的結果：在反應時間上，字首的異同效果未達顯著水準，而順序效果達到顯著，結果報表參見附件。在反應正確率上，順序效果達顯著，結果報表參見附件。

「非詞」的結果：在反應時間上，順序效果達到顯著，結果報表參見附件。在反應正確率上，字首異同效果與順序效果則均未達顯著，結果報表參見附件。

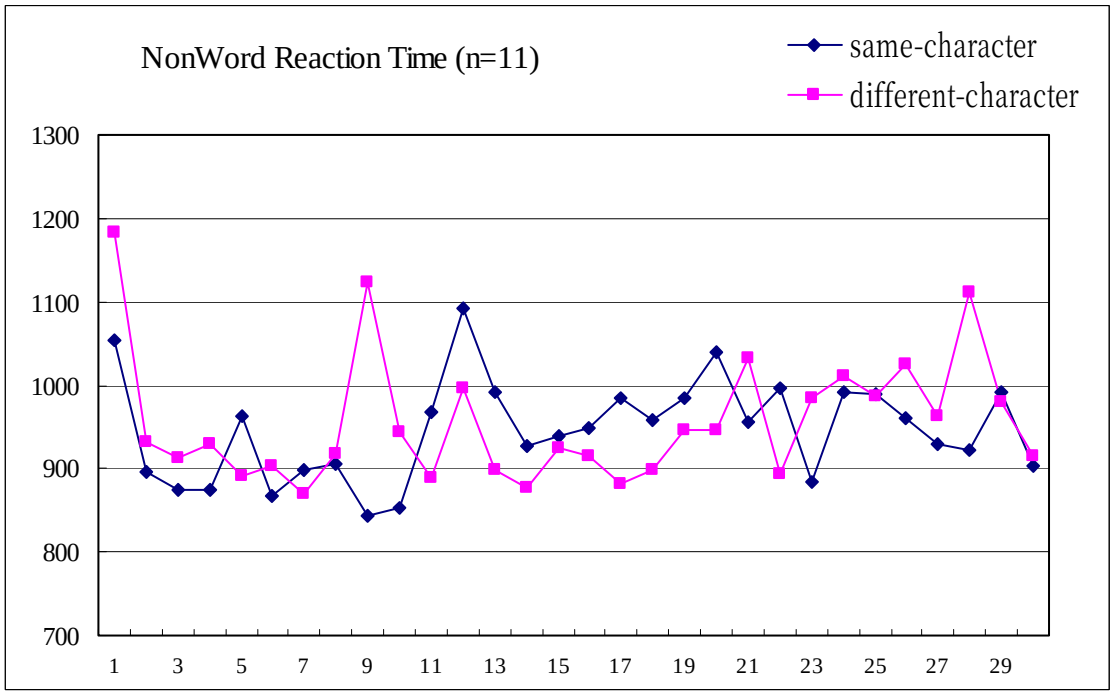
Exp. 2 (N=11)

Reaction Time

Word

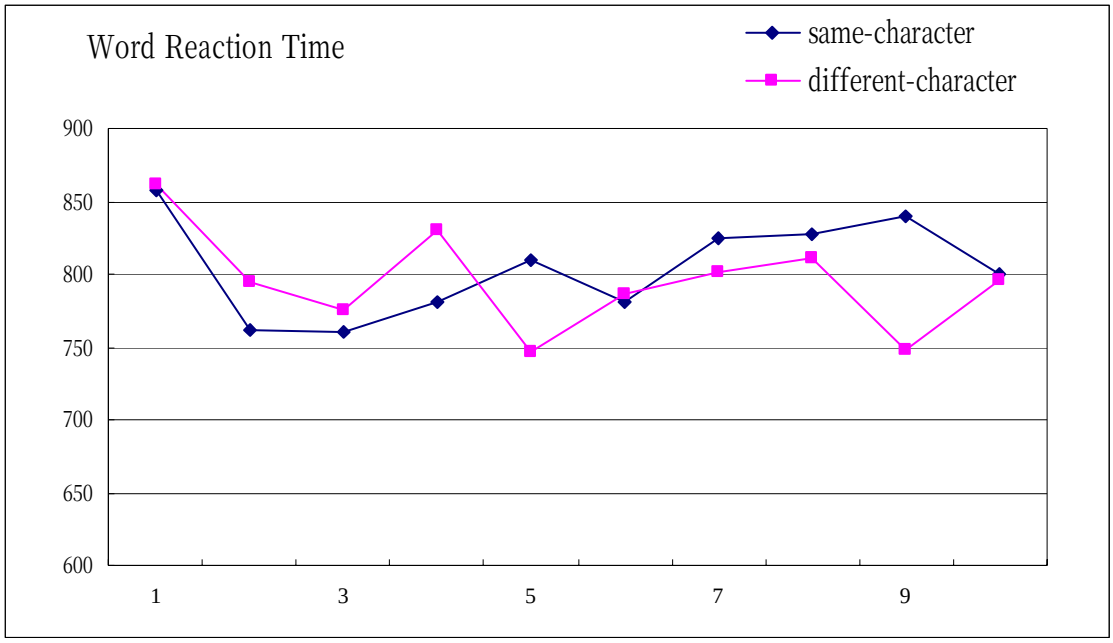


Pseudo Word

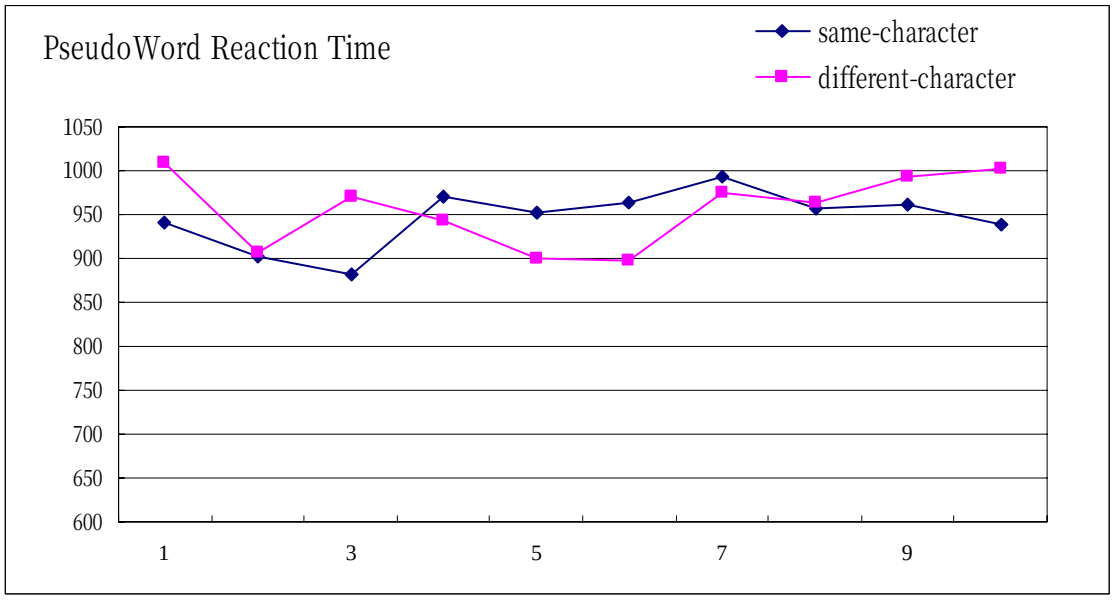


Reaction Time (into ten blocks)

Word

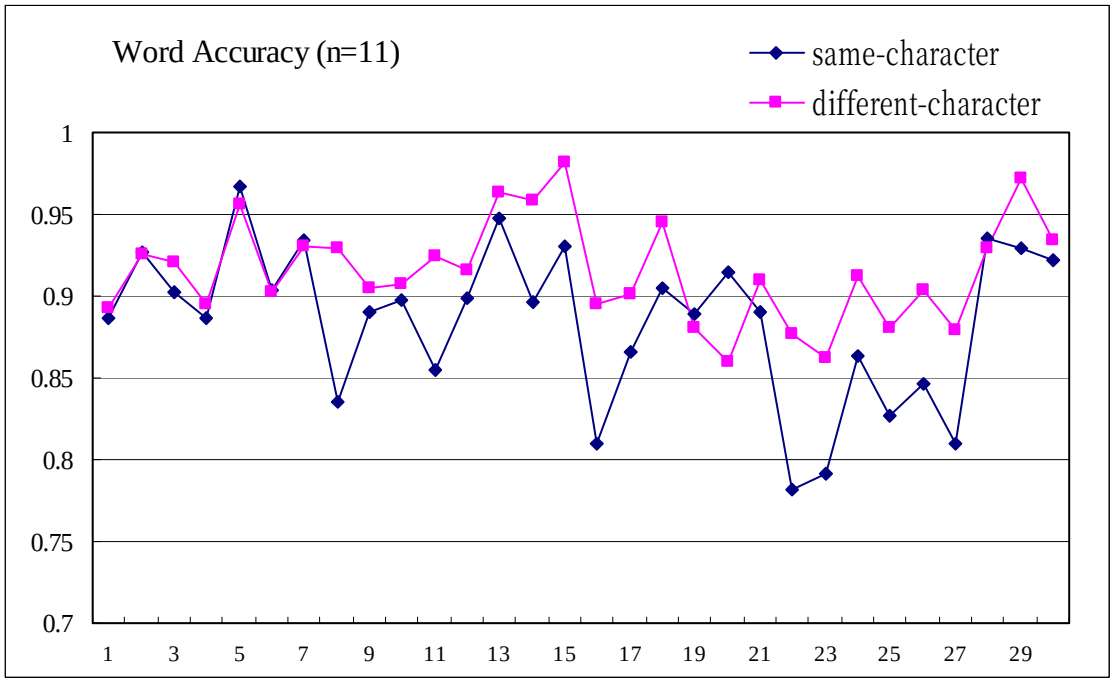


PseudoWord

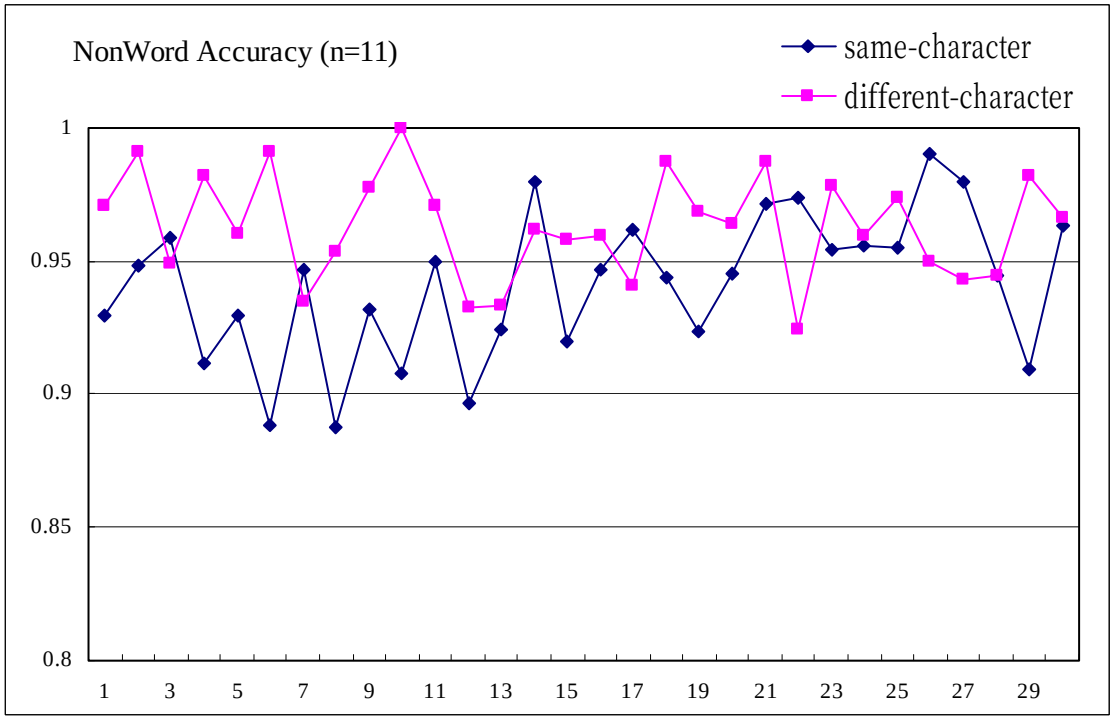


Accuracy

Word

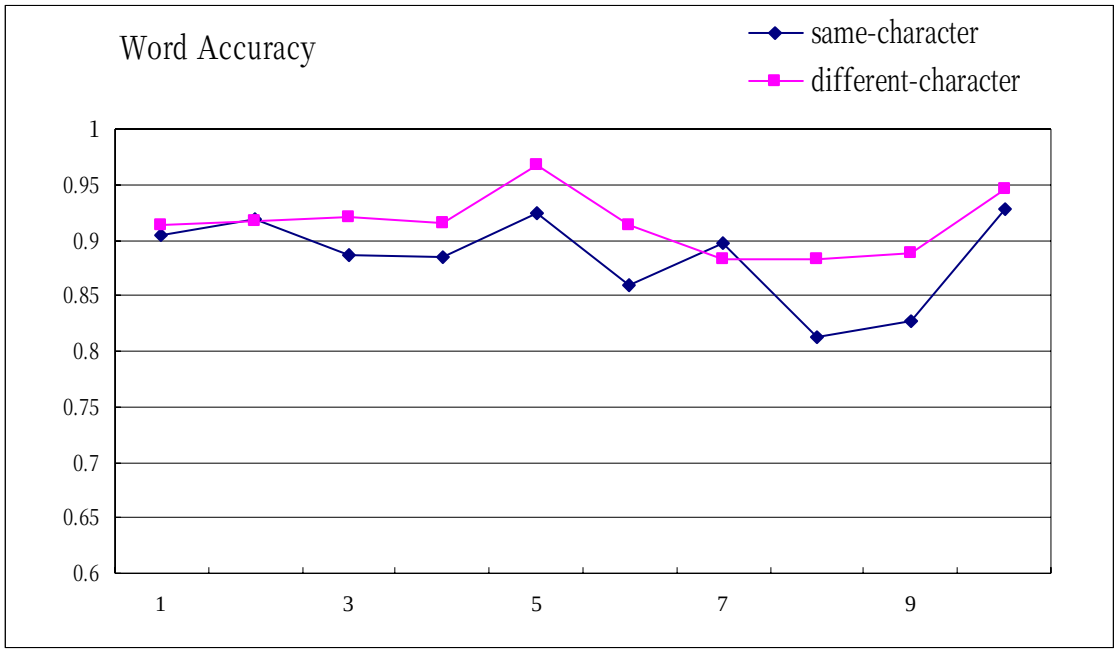


Pseudo Word

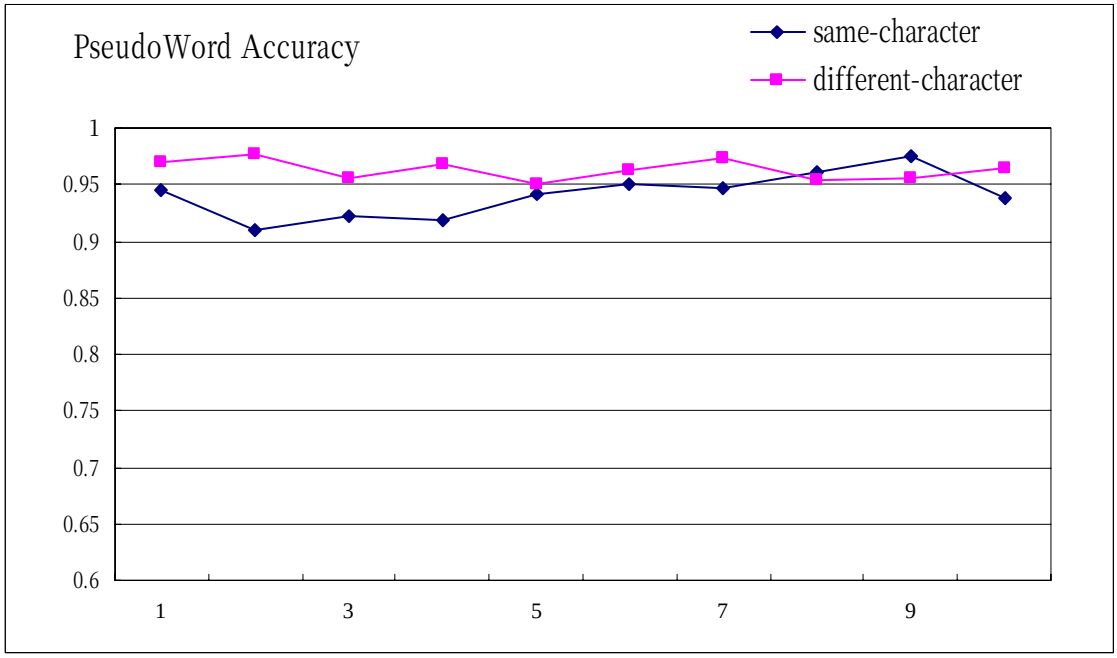


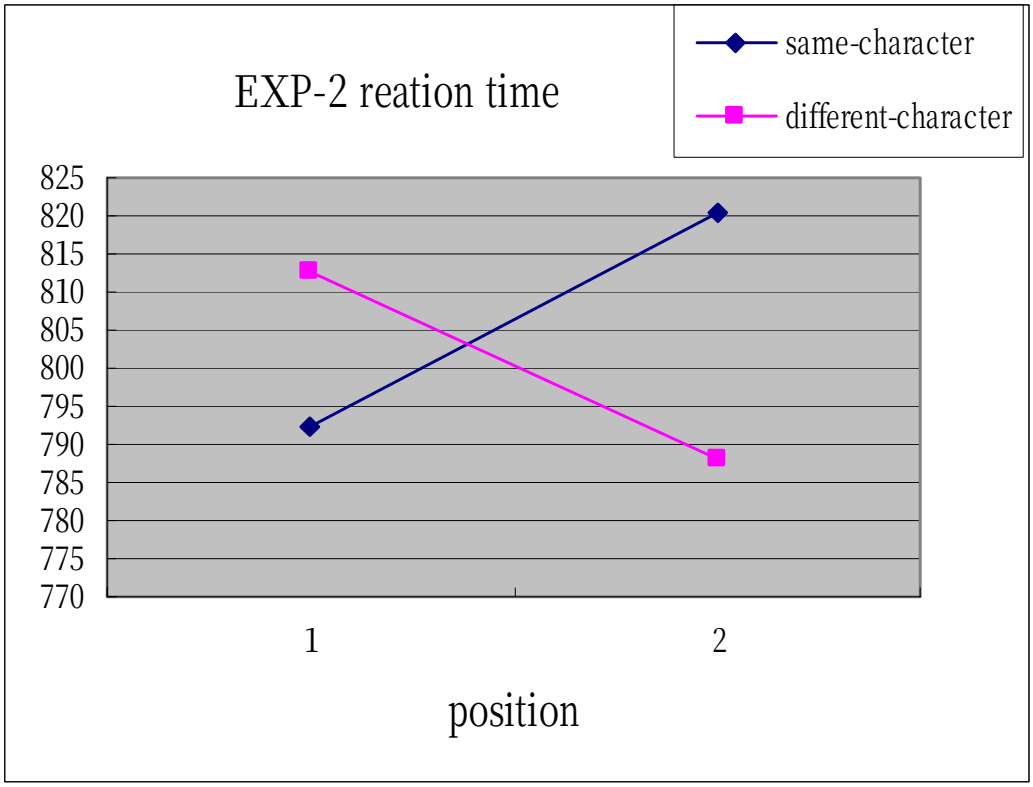
Accuracy (into ten blocks)

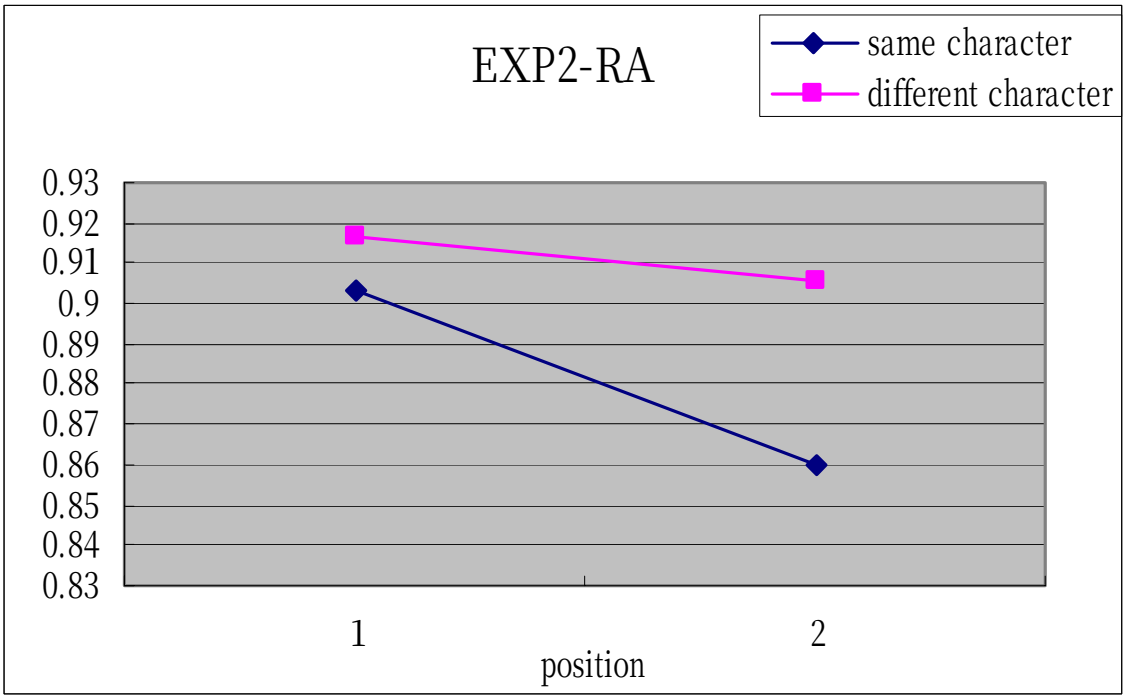
Word



PseudoWord




EXP-2 reation time
same-character
different-character
825
820
815
810
805
800
795
790
785
780
775
770
1
2
position


EXP2-RA
same character
different character
0.93
0.92
0.91
0.9
0.89
0.88
0.87
0.86
0.85
0.84
0.83
1
2
position

exp2-RT					
Source	SS	df	MS	F	P
S	838517.6	10	83851.77		
A　(首字相同或相異)	382.09	1	382.09	0.087	0.6886
AS	44091.79	10	4409.179		
B(位置)	32.126	1	32.126	0.017	0.6042
BS	19338.71	10	1933.871		
AB	7665.689	1	7665.689	3.215	0.1006
ABS	23842.36	10	2384.236		

exp2-RA					
Source	SS	df	MS	F	P
S	0.094	10	0.009		
A	0.01	1	0.01	2.186	0.1677
AS	0.045	10	0.004		
B	0.008	1	0.008	9.397	0.0116
BS	0.009	10	0.001		
AB	0.003	1	0.003	4.064	0.0691
ABS 0.007 10 0.001	0.007	10	0.001		

****
* General ANOVA Program *
* Vesion 3.0 *
* Chao-Ming Cheng & Shyue-Jyh Chern *
* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp2_n11.med
Output Device : 2WMED11.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 30
Levels of S : 12
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1= 804.914[205.888] A2= 812.079[241.200]

Means of Bj :

B1= 1067.241[366.280] B2= 778.457[151.481]
B3= 805.343[257.427] B4= 761.555[176.882]

B5=	800.988[170.877]	B6=	748.641[185.596]
B7=	805.218[213.502]	B8=	749.183[155.235]
B9=	813.094[231.779]	B:=	808.651[247.621]
B11=	804.399[272.669]	B12=	811.798[282.243]
B13=	815.162[228.341]	B14=	786.963[194.948]
B15=	740.568[107.141]	B16=	786.655[183.110]
B17=	790.994[170.252]	B18=	796.331[153.161]
B19=	811.675[197.254]	B1:=	814.569[241.958]
B21=	813.996[169.044]	B22=	823.132[186.075]
B23=	882.189[268.021]	B24=	785.995[165.641]
B25=	860.313[355.371]	B26=	787.522[188.177]
B27=	814.094[187.764]	B28=	759.632[123.743]
B29=	839.628[253.111]	B2:=	790.914[177.812]

Means of AiBj :

A1B1=	1026.905[233.353]	A1B2=	740.558[140.750]
A1B3=	800.146[329.954]	A1B4=	773.583[212.229]
A1B5=	778.360[130.289]	A1B6=	721.613[101.006]
A1B7=	830.988[256.672]	A1B8=	728.937[137.483]
A1B9=	764.737[138.839]	A1B:=	779.153[183.218]
A1B11=	767.321[106.294]	A1B12=	799.216[176.732]
A1B13=	873.810[264.964]	A1B14=	838.786[227.938]
A1B15=	740.659[91.726]	A1B16=	800.772[220.184]
A1B17=	783.970[119.458]	A1B18=	794.714[129.592]
A1B19=	821.380[199.239]	A1B1:=	826.095[216.330]
A1B21=	805.965[189.885]	A1B22=	847.003[176.166]
A1B23=	828.901[216.194]	A1B24=	778.653[146.195]
A1B25=	850.085[350.690]	A1B26=	823.859[215.929]
A1B27=	838.744[171.324]	A1B28=	739.747[100.895]
A1B29=	814.010[224.459]	A1B2:=	828.747[223.187]
A2B1=	1107.578[458.928]	A2B2=	816.355[152.348]
A2B3=	810.540[153.666]	A2B4=	749.527[131.317]
A2B5=	823.615[200.993]	A2B6=	775.669[239.225]
A2B7=	779.448[154.780]	A2B8=	769.430[168.744]
A2B9=	861.451[288.946]	A2B:=	838.150[295.505]
A2B11=	841.476[366.945]	A2B12=	824.380[357.451]
A2B13=	756.514[164.906]	A2B14=	735.139[136.683]
A2B15=	740.477[120.601]	A2B16=	772.538[134.828]
A2B17=	798.018[208.813]	A2B18=	797.948[173.544]
A2B19=	801.970[194.766]	A2B1:=	803.043[264.619]
A2B21=	822.027[144.798]	A2B22=	799.262[192.545]

A2B23=	935.476[302.079]	A2B24=	793.336[182.737]
A2B25=	870.540[359.700]	A2B26=	751.185[146.817]
A2B27=	789.444[199.859]	A2B28=	779.516[140.194]
A2B29=	865.247[276.470]	A2B2:=	753.081[102.757]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	13472101.720	11	1224736.520		
A	9241.596	1	9241.596	0.098	0.6877
AS	1036313.961	11	94210.360		
B	2313261.591	29	79767.641	2.615	0.0001
BS	9732040.813	319	30507.965		
AB	589321.723	29	20321.439	0.715	0.6165
ABS	9061147.853	319	28404.852		

---

* means difference between row-mean & column-mean
come up 0.05 significant level.

** means difference between row-mean & column-mean
come up 0.01 significant level.

Data Range Error !
Bypass this datum .

MsError = 30507.964932
df(MsError) = 319
# of groups = 30
cell in group = 24
q(319,30).05 = 10.480000
q(319,30).01 = 0.000000
C(.05) = 373.647672

C(.01) = 0.000000

Label	B1	B2	B3	B4	B5	B6	B7
Means	1067.241	778.457	805.343	761.555	800.988	748.641	805.218
B1		**	**	**	**	**	**
B2				**		**	
B3		**		**	**	**	**
B4						**	
B5		**		**		**	
B6							
B7		**		**	**	**	
B8						**	
B9		**	**	**	**	**	**
B:		**	**	**	**	**	**
B11		**		**	**	**	
B12		**	**	**	**	**	**
B13		**	**	**	**	**	**
B14		**		**		**	
B15							
B16		**		**		**	
B17		**		**		**	
B18		**		**		**	
B19		**	**	**	**	**	**
B1:		**	**	**	**	**	**
B21		**	**	**	**	**	**
B22		**	**	**	**	**	**
B23		**	**	**	**	**	**
B24		**		**		**	
B25		**	**	**	**	**	**
B26		**		**		**	
B27		**	**	**	**	**	**
B28						**	
B29		**	**	**	**	**	**
B2:		**		**		**	

Label	B8	B9	B:	B11	B12	B13	B14
Means	749.183	813.094	808.651	804.399	811.798	815.162	786.963

B1	**	**	**	**	**	**	**
B2	**						
B3	**			**			**
B4	**						
B5	**						**
B6							
B7	**			**			**
B8							
B9	**		**	**	**		**
B:	**			**			**
B11	**						**
B12	**		**	**			**
B13	**	**	**	**	**		**
B14	**						
B15							
B16	**						
B17	**						**
B18	**						**
B19	**		**	**			**
B1:	**	**	**	**	**		**
B21	**	**	**	**	**		**
B22	**	**	**	**	**	**	**
B23	**	**	**	**	**	**	**
B24	**						
B25	**	**	**	**	**	**	**
B26	**						**
B27	**	**	**	**	**		**
B28	**						
B29	**	**	**	**	**	**	**
B2:	**						**

Label	B15	B16	B17	B18	B19	B1:	B21
Means	740.568	786.655	790.994	796.331	811.675	814.569	813.996

B1	**	**	**	**	**	**	**
B2	**						
B3	**	**	**	**			
B4	**						

B5	**	**	**	**			
B6	**						
B7	**	**	**	**			
B8	**						
B9	**	**	**	**	**		
B:	**	**	**	**			
B11	**	**	**	**			
B12	**	**	**	**	**		
B13	**	**	**	**	**	**	**
B14	**	**					
B15							
B16	**						
B17	**	**					
B18	**	**	**				
B19	**	**	**	**			
B1:	**	**	**	**	**		**
B21	**	**	**	**	**		
B22	**	**	**	**	**	**	**
B23	**	**	**	**	**	**	**
B24	**						
B25	**	**	**	**	**	**	**
B26	**	**					
B27	**	**	**	**	**		**
B28	**						
B29	**	**	**	**	**	**	**
B2:	**	**					

Label	B22	B23	B24	B25	B26	B27	B28
Means	823.132	882.189	785.995	860.313	787.522	814.094	759.632

B1	**	**	**	**	**	**	**
B2							**
B3			**		**		**
B4							**
B5			**		**		**
B6							
B7			**		**		**
B8							
B9			**		**		**

B:			**		**	**
B11			**		**	**
B12			**		**	**
B13			**		**	**	**
B14			**			**
B15						
B16			**			**
B17			**		**	**
B18			**		**	**
B19			**		**	**
B1:			**		**	**	**
B21			**		**	**
B22			**		**	**	**
B23		**	**	**	**	**	**
B24							**
B25		**	**		**	**	**
B26			**				**
B27			**		**		**
B28							
B29		**	**		**	**	**
B2:			**		**		**

Label	B29	B2:
Means	839.628	790.914
B1	**	**
B2		
B3		**
B4		
B5		**
B6		
B7		**
B8		
B9		**
B:		**
B11		**
B12		**
B13		**
B14		

```
B15     |
B16     |
B17     |                  **
B18     |                  **
B19     |                  **
B1:     |                  **
B21     |                  **
B22     |                  **
B23     |        **        **
B24     |
B25     |        **        **
B26     |
B27     |                  **
B28     |
B29     |                  **
B2:     |
```

****
* General ANOVA Program *
* Vesion 3.0 *
* Chao-Ming Cheng & Shyue-Jyh Chern *
* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp2_n11.acc
Output Device : 2WACC11.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 30
Levels of S : 12
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1=	0.888[	0.135]	A2=	0.916[	0.106]

Means of Bj :

B1=	0.884[	0.093]	B2=	0.927[	0.119]
B3=	0.919[	0.112]	B4=	0.900[	0.111]

B5=	0.965[	0.090]	B6=	0.894[	0.116]
B7=	0.933[	0.120]	B8=	0.888[	0.133]
B9=	0.906[	0.106]	B:=	0.904[	0.120]
B11=	0.899[	0.110]	B12=	0.915[	0.128]
B13=	0.953[	0.068]	B14=	0.923[	0.129]
B15=	0.953[	0.069]	B16=	0.865[	0.159]
B17=	0.879[	0.134]	B18=	0.925[	0.115]
B19=	0.883[	0.113]	B1:=	0.888[	0.123]
B21=	0.908[	0.134]	B22=	0.840[	0.124]
B23=	0.828[	0.130]	B24=	0.889[	0.127]
B25=	0.857[	0.128]	B26=	0.878[	0.120]
B27=	0.858[	0.139]	B28=	0.928[	0.112]
B29=	0.949[	0.087]	B2:=	0.925[	0.108]

Means of AiBj :

A1B1=	0.886[	0.093]	A1B2=	0.933[	0.122]
A1B3=	0.911[	0.115]	A1B4=	0.896[	0.107]
A1B5=	0.970[	0.070]	A1B6=	0.879[	0.137]
A1B7=	0.930[	0.125]	A1B8=	0.849[	0.150]
A1B9=	0.899[	0.112]	A1B:=	0.907[	0.129]
A1B11=	0.867[	0.134]	A1B12=	0.908[	0.125]
A1B13=	0.940[	0.073]	A1B14=	0.884[	0.161]
A1B15=	0.922[	0.068]	A1B16=	0.825[	0.192]
A1B17=	0.863[	0.172]	A1B18=	0.913[	0.141]
A1B19=	0.886[	0.077]	A1B1:=	0.913[	0.097]
A1B21=	0.900[	0.151]	A1B22=	0.800[	0.126]
A1B23=	0.799[	0.147]	A1B24=	0.875[	0.154]
A1B25=	0.825[	0.151]	A1B26=	0.845[	0.129]
A1B27=	0.826[	0.150]	A1B28=	0.940[	0.112]
A1B29=	0.923[	0.102]	A1B2:=	0.928[	0.108]
A2B1=	0.881[	0.094]	A2B2=	0.921[	0.116]
A2B3=	0.928[	0.109]	A2B4=	0.904[	0.115]
A2B5=	0.959[	0.105]	A2B6=	0.910[	0.087]
A2B7=	0.936[	0.115]	A2B8=	0.927[	0.098]
A2B9=	0.913[	0.100]	A2B:=	0.902[	0.110]
A2B11=	0.930[	0.065]	A2B12=	0.923[	0.130]
A2B13=	0.966[	0.059]	A2B14=	0.962[	0.067]
A2B15=	0.983[	0.055]	A2B16=	0.904[	0.105]
A2B17=	0.896[	0.078]	A2B18=	0.938[	0.078]
A2B19=	0.881[	0.140]	A2B1:=	0.864[	0.140]
A2B21=	0.917[	0.112]	A2B22=	0.880[	0.108]

A2B23=	0.857[	0.101]	A2B24=	0.902[	0.090]
A2B25=	0.890[	0.090]	A2B26=	0.912[	0.100]
A2B27=	0.889[	0.118]	A2B28=	0.915[	0.111]
A2B29=	0.974[	0.058]	A2B2:=	0.921[	0.107]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	1.403	11	0.128		
A	0.142	1	0.142	2.173	0.1661
AS	0.720	11	0.065		
B	0.784	29	0.027	2.058	0.0017
BS	4.190	319	0.013		
AB	0.217	29	0.007	0.729	0.6394
ABS	3.268	319	0.010		

---

* means difference between row-mean & column-mean
come up 0.05 significant level.

** means difference between row-mean & column-mean
come up 0.01 significant level.

Data Range Error !
Bypass this datum .

MsError = 0.013135
df(MsError) = 319
# of groups = 30
cell in group = 24
q(319,30).05 = 10.480000
q(319,30).01 = 0.000000
C(.05) = 0.245167

C(.01) = 0.000000

Label	B1	B2	B3	B4	B5	B6	B7
Means	0.884	0.927	0.919	0.900	0.965	0.894	0.933
B1							
B2	**		**	**		**	
B3	**			**		**	
B4	**					**	
B5	**	**	**	**		**	**
B6	**						
B7	**	**	**	**		**	
B8	**						
B9	**			**		**	
B:	**			**		**	
B11	**					**	
B12	**			**		**	
B13	**	**	**	**		**	**
B14	**		**	**		**	
B15	**	**	**	**		**	**
B16							
B17							
B18	**		**	**		**	
B19							
B1:	**						
B21	**			**		**	
B22							
B23							
B24	**						
B25							
B26							
B27							
B28	**	**	**	**		**	
B29	**	**	**	**		**	**
B2:	**		**	**		**	

Label	B8	B9	B:	B11	B12	B13	B14
Means	0.888	0.906	0.904	0.899	0.915	0.953	0.923

B1							
B2	**	**	**	**	**		**
B3	**	**	**	**	**		
B4	**			**			
B5	**	**	**	**	**	**	**
B6	**						
B7	**	**	**	**	**		**
B8							
B9	**		**	**			
B:	**			**			
B11	**						
B12	**	**	**	**			
B13	**	**	**	**	**		**
B14	**	**	**	**	**		
B15	**	**	**	**	**		**
B16							
B17							
B18	**	**	**	**	**		**
B19							
B1:	**						
B21	**	**	**	**			
B22							
B23							
B24	**						
B25							
B26							
B27							
B28	**	**	**	**	**		**
B29	**	**	**	**	**		**
B2:	**	**	**	**	**		**

Label	B15	B16	B17	B18	B19	B1:	B21
Means	0.953	0.865	0.879	0.925	0.883	0.888	0.908

B1		**	**		**		
B2		**	**	**	**	**	**
B3		**	**		**	**	**
B4		**	**		**	**	

B5	**	**	**	**	**	**	**
B6		**	**		**	**	
B7		**	**	**	**	**	**
B8		**	**		**		
B9		**	**		**	**	
B:		**	**		**	**	
B11		**	**		**	**	
B12		**	**		**	**	**
B13	**	**	**	**	**	**	**
B14		**	**		**	**	**
B15		**	**	**	**	**	**
B16							
B17		**					
B18		**	**		**	**	**
B19		**	**				
B1:		**	**		**		
B21		**	**		**	**	
B22							
B23							
B24		**	**		**	**	
B25							
B26		**					
B27							
B28		**	**	**	**	**	**
B29		**	**	**	**	**	**
B2:		**	**		**	**	**

Label	B22	B23	B24	B25	B26	B27	B28
Means	0.840	0.828	0.889	0.857	0.878	0.858	0.928

B1	**	**		**	**	**	
B2	**	**	**	**	**	**	
B3	**	**	**	**	**	**	
B4	**	**	**	**	**	**	
B5	**	**	**	**	**	**	**
B6	**	**	**	**	**	**	
B7	**	**	**	**	**	**	**
B8	**	**		**	**	**	
B9	**	**	**	**	**	**	

B:	**	**	**	**	**	**	
B11	**	**	**	**	**	**	
B12	**	**	**	**	**	**	
B13	**	**	**	**	**	**	**
B14	**	**	**	**	**	**	
B15	**	**	**	**	**	**	**
B16	**	**		**		**	
B17	**	**		**	**	**	
B18	**	**	**	**	**	**	
B19	**	**		**	**	**	
B1:	**	**		**	**	**	
B21	**	**	**	**	**	**	
B22		**					
B23							
B24	**	**		**	**	**	
B25	**	**					
B26	**	**		**		**	
B27	**	**		**			
B28	**	**	**	**	**	**	
B29	**	**	**	**	**	**	**
B2:	**	**	**	**	**	**	

Label	B29	B2:
Means	0.949	0.925
B1		
B2		**
B3		
B4		
B5	**	**
B6		
B7		**
B8		
B9		
B:		
B11		
B12		
B13	**	**
B14		

B15 | ** **
B16 |
B17 |
B18 | **
B19 |
B1: |
B21 |
B22 |
B23 |
B24 |
B25 |
B26 |
B27 |
B28 | **
B29 | **
B2: |

****
* General ANOVA Program *
* Vesion 3.0 *
* Chao-Ming Cheng & Shyue-Jyh Chern *
* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : DuckExp2_n11.med
Output Device : 2NWMED11.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 30
Levels of S : 12
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1= 959.616[356.822] A2= 973.424[302.024]

Means of Bj :

B1= 1212.715[434.323] B2= 939.072[207.687]
B3= 903.659[197.848] B4= 916.824[213.922]

B5= 923.405[266.971] B6= 923.114[251.153]
B7= 937.608[290.628] B8= 933.121[248.552]
B9= 1006.429[386.823] B:= 906.160[262.681]
B11= 924.121[306.322] B12= 1033.525[448.092]
B13= 945.430[270.282] B14= 896.718[251.000]
B15= 933.341[302.957] B16= 931.754[364.849]
B17= 935.368[319.839] B18= 950.784[325.956]
B19= 975.377[336.071] B1:= 996.025[318.233]
B21= 992.322[387.832] B22= 983.912[373.498]
B23= 1017.558[464.593] B24= 1018.031[433.504]
B25= 994.978[321.230] B26= 991.964[332.342]
B27= 951.273[311.773] B28= 1010.823[372.677]
B29= 1000.251[259.300] B2:= 909.944[256.193]

Means of AiBj :

A1B1= 1162.959[433.666] A1B2= 896.976[168.442]
A1B3= 877.622[236.354] A1B4= 886.257[224.450]
A1B5= 947.256[308.160] A1B6= 914.089[254.820]
A1B7= 927.848[284.832] A1B8= 933.023[210.687]
A1B9= 873.425[222.520] A1B:= 855.500[260.215]
A1B11= 966.156[350.991] A1B12= 1064.509[570.022]
A1B13= 993.202[336.766] A1B14= 917.917[318.097]
A1B15= 935.602[338.413] A1B16= 938.827[485.368]
A1B17= 969.254[413.283] A1B18= 955.142[408.753]
A1B19= 967.873[379.073] A1B1:= 1030.771[418.090]
A1B21= 941.634[362.256] A1B22= 1018.513[441.423]
A1B23= 1045.505[583.595] A1B24= 985.224[319.408]
A1B25= 991.890[331.460] A1B26= 970.552[277.087]
A1B27= 952.607[325.388] A1B28= 944.766[273.834]
A1B29= 1019.965[304.809] A1B2:= 903.620[276.157]
A2B1= 1262.472[429.251] A2B2= 981.168[233.133]
A2B3= 929.695[145.149] A2B4= 947.390[198.188]
A2B5= 899.555[215.516] A2B6= 932.140[247.103]
A2B7= 947.368[295.989] A2B8= 933.219[281.366]
A2B9= 1139.432[463.000] A2B:= 956.821[255.261]
A2B11= 882.086[246.856] A2B12= 1002.540[273.365]
A2B13= 897.657[167.718] A2B14= 875.518[154.653]
A2B15= 931.079[262.741] A2B16= 924.682[174.780]
A2B17= 901.481[177.468] A2B18= 946.426[213.019]
A2B19= 982.880[286.494] A2B1:= 961.279[159.158]
A2B21= 1043.010[405.537] A2B22= 949.311[285.925]

A2B23= 989.612[299.247] A2B24= 1050.839[521.226]
A2B25= 998.066[310.632] A2B26= 1013.377[378.428]
A2B27= 949.938[297.529] A2B28= 1076.879[440.528]
A2B29= 980.537[201.960] A2B2:= 916.267[234.366]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	40360627.991	11	3669147.999		
A	34318.748	1	34318.748	0.362	0.5634
AS	1043977.540	11	94907.049		
B	2616381.418	29	90220.049	1.640	0.0224
BS	17549019.600	319	55012.601		
AB	1062297.675	29	36630.954	0.728	0.6383
ABS	16042369.866	319	50289.561		

---

* means difference between row-mean & column-mean
come up 0.05 significant level.
** means difference between row-mean & column-mean
come up 0.01 significant level.

Data Range Error !
Bypass this datum .

MsError = 55012.600628
df(MsError) = 319
# of groups = 30
cell in group = 24
q(319,30).05 = 10.480000
q(319,30).01 = 0.000000
C(.05) = 501.749271

C(.01) = 0.000000

Label	B1	B2	B3	B4	B5	B6	B7
Means	1212.715	939.072	903.659	916.824	923.405	923.114	937.608
B1		**	**	**	**	**	**
B2			**	**	**	**	**
B3							
B4			**				
B5			**	**		**	
B6			**	**			
B7			**	**	**	**	
B8			**	**	**	**	
B9		**	**	**	**	**	**
B:			**				
B11			**	**	**	**	
B12		**	**	**	**	**	**
B13		**	**	**	**	**	**
B14							
B15			**	**	**	**	
B16			**	**	**	**	
B17			**	**	**	**	
B18		**	**	**	**	**	**
B19		**	**	**	**	**	**
B1:		**	**	**	**	**	**
B21		**	**	**	**	**	**
B22		**	**	**	**	**	**
B23		**	**	**	**	**	**
B24		**	**	**	**	**	**
B25		**	**	**	**	**	**
B26		**	**	**	**	**	**
B27		**	**	**	**	**	**
B28		**	**	**	**	**	**
B29		**	**	**	**	**	**
B2:			**				

Label	B8	B9	B:	B11	B12	B13	B14
Means	933.121	1006.429	906.160	924.121	1033.525	945.430	896.718

B1	**	**	**	**	**	**	**
B2	**		**	**			**
B3							**
B4			**				**
B5			**				**
B6			**				**
B7	**		**	**			**
B8			**	**			**
B9	**		**	**		**	**
B:							**
B11			**				**
B12	**	**	**	**		**	**
B13	**		**	**			**
B14							
B15	**		**	**			**
B16			**	**			**
B17	**		**	**			**
B18	**		**	**		**	**
B19	**		**	**		**	**
B1:	**		**	**		**	**
B21	**		**	**		**	**
B22	**		**	**		**	**
B23	**	**	**	**		**	**
B24	**	**	**	**		**	**
B25	**		**	**		**	**
B26	**		**	**		**	**
B27	**		**	**		**	**
B28	**	**	**	**		**	**
B29	**		**	**		**	**
B2:			**				**

Label	B15	B16	B17	B18	B19	B1:	B21
Means	933.341	931.754	935.368	950.784	975.377	996.025	992.322

B1	**	**	**	**	**	**	**
B2	**	**	**				
B3							
B4							

B5							
B6							
B7	**	**	**				
B8		**					
B9	**	**	**	**	**	**	**
B:							
B11							
B12	**	**	**	**	**	**	**
B13	**	**	**				
B14							
B15		**					
B16							
B17	**	**					
B18	**	**	**				
B19	**	**	**	**			
B1:	**	**	**	**	**		**
B21	**	**	**	**	**		
B22	**	**	**	**	**		
B23	**	**	**	**	**	**	**
B24	**	**	**	**	**	**	**
B25	**	**	**	**	**		**
B26	**	**	**	**	**		
B27	**	**	**	**			
B28	**	**	**	**	**	**	**
B29	**	**	**	**	**	**	**
B2:							

Label	B22	B23	B24	B25	B26	B27	B28
Means	983.912	1017.558	1018.031	994.978	991.964	951.273	1010.823

B1	**	**	**	**	**	**	**
B2							
B3							
B4							
B5							
B6							
B7							
B8							
B9	**			**	**	**	

B:							
B11							
B12	**	**	**	**	**	**	**
B13							
B14							
B15							
B16							
B17							
B18							
B19						**	
B1:	**			**	**	**	
B21	**				**	**	
B22						**	
B23	**			**	**	**	**
B24	**	**		**	**	**	**
B25	**				**	**	
B26	**					**	
B27							
B28	**			**	**	**	
B29	**			**	**	**	
B2:							

Label	B29	B2:
Means	1000.251	909.944
B1	**	**
B2		**
B3		
B4		**
B5		**
B6		**
B7		**
B8		**
B9	**	**
B:		
B11		**
B12	**	**
B13		**
B14		

```
B15     |                 **
B16     |                 **
B17     |                 **
B18     |                 **
B19     |                 **
B1:     |                 **
B21     |                 **
B22     |                 **
B23     |       **        **
B24     |       **        **
B25     |                 **
B26     |                 **
B27     |                 **
B28     |       **        **
B29     |                 **
B2:     |
```

****
* General ANOVA Program *
* Vesion 3.0 *
* Chao-Ming Cheng & Shyue-Jyh Chern *
* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp2_n11.acc
Output Device : 2NWACC11.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 30
Levels of S : 12
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1=	0.944[	0.109]	A2=	0.963[	0.073]

Means of Bj :

B1=	0.954[	0.099]	B2=	0.966[	0.072]
B3=	0.958[	0.068]	B4=	0.951[	0.114]

B5=	0.950[	0.108]	B6=	0.933[	0.134]
B7=	0.946[	0.102]	B8=	0.927[	0.128]
B9=	0.959[	0.082]	B:=	0.949[	0.078]
B11=	0.964[	0.068]	B12=	0.916[	0.121]
B13=	0.935[	0.105]	B14=	0.969[	0.056]
B15=	0.935[	0.114]	B16=	0.957[	0.091]
B17=	0.951[	0.064]	B18=	0.968[	0.063]
B19=	0.945[	0.083]	B1:=	0.959[	0.129]
B21=	0.981[	0.050]	B22=	0.953[	0.087]
B23=	0.955[	0.098]	B24=	0.945[	0.102]
B25=	0.968[	0.067]	B26=	0.968[	0.056]
B27=	0.965[	0.101]	B28=	0.949[	0.076]
B29=	0.950[	0.097]	B2:=	0.968[	0.059]

Means of AiBj :

A1B1=	0.935[	0.120]	A1B2=	0.952[	0.089]
A1B3=	0.962[	0.068]	A1B4=	0.919[	0.145]
A1B5=	0.935[	0.119]	A1B6=	0.881[	0.171]
A1B7=	0.951[	0.110]	A1B8=	0.897[	0.160]
A1B9=	0.938[	0.101]	A1B:=	0.906[	0.088]
A1B11=	0.954[	0.081]	A1B12=	0.905[	0.146]
A1B13=	0.931[	0.127]	A1B14=	0.981[	0.041]
A1B15=	0.917[	0.126]	A1B16=	0.951[	0.110]
A1B17=	0.965[	0.061]	A1B18=	0.948[	0.076]
A1B19=	0.930[	0.100]	A1B1:=	0.950[	0.166]
A1B21=	0.974[	0.058]	A1B22=	0.976[	0.079]
A1B23=	0.931[	0.127]	A1B24=	0.959[	0.077]
A1B25=	0.959[	0.078]	A1B26=	0.981[	0.041]
A1B27=	0.981[	0.061]	A1B28=	0.949[	0.087]
A1B29=	0.917[	0.116]	A1B2:=	0.967[	0.063]
A2B1=	0.973[	0.065]	A2B2=	0.980[	0.046]
A2B3=	0.953[	0.067]	A2B4=	0.983[	0.055]
A2B5=	0.964[	0.094]	A2B6=	0.985[	0.034]
A2B7=	0.940[	0.093]	A2B8=	0.958[	0.074]
A2B9=	0.980[	0.049]	A2B:=	0.991[	0.031]
A2B11=	0.973[	0.048]	A2B12=	0.928[	0.088]
A2B13=	0.939[	0.079]	A2B14=	0.957[	0.065]
A2B15=	0.953[	0.096]	A2B16=	0.963[	0.067]
A2B17=	0.936[	0.064]	A2B18=	0.988[	0.039]
A2B19=	0.960[	0.059]	A2B1:=	0.967[	0.076]
A2B21=	0.988[	0.039]	A2B22=	0.930[	0.089]

A2B23=	0.980[	0.046]	A2B24=	0.930[	0.119]
A2B25=	0.976[	0.053]	A2B26=	0.954[	0.065]
A2B27=	0.948[	0.126]	A2B28=	0.949[	0.062]
A2B29=	0.983[	0.055]	A2B2:=	0.969[	0.056]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	1.158	11	0.105		
A	0.066	1	0.066	0.768	0.4035
AS	0.943	11	0.086		
B	0.138	29	0.005	0.803	0.6883
BS	1.895	319	0.006		
AB	0.231	29	0.008	1.384	0.0944
ABS	1.836	319	0.006		

Experiment 3

Method.

Participants. 29 university students participated in this study.

Material. Same as experiment 2.

Procedure. The procedure of experiment 3 is similar to experiment 2 except that the participants were asked to judge as **quickly** as possible instead of as accurate as possible and that after each break the participants were first required to place their hand on the response position, focus attention to the fixation point (+) to prevent the delayed response of the first item. The fixation point in exposed for two seconds and then was replaced by a target item.

Result

以 2×30 二因子 ANOVA 分析詞彙判斷的反應時間及正確率，並分別將「詞」與「非詞」的結果分開分析。

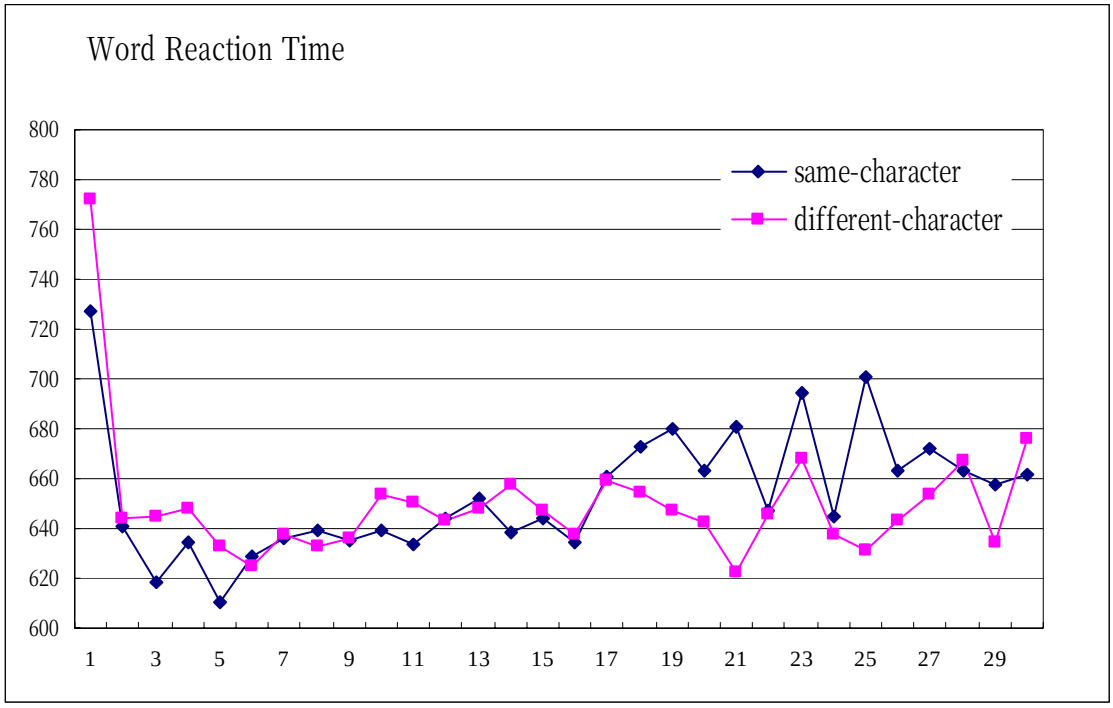
「詞」的結果：在反應時間上，字首的異同效果未達顯著水準，順序效果達到顯著，結果報表參見附件。在反應正確率上，字首異同效果達到顯著水準，字首相異的平均反應正確率（0.917）較字首相同組（0.905）高；順序效果則未達顯著，結果報表參見附件。

「非詞」的結果：在反應時間上，字首的異同效果達顯著水準，順序效果亦達到顯著，結果報表參見附件。在反應正確率上，字首異同效果與順序效果則未達顯著，結果報表參見附件。

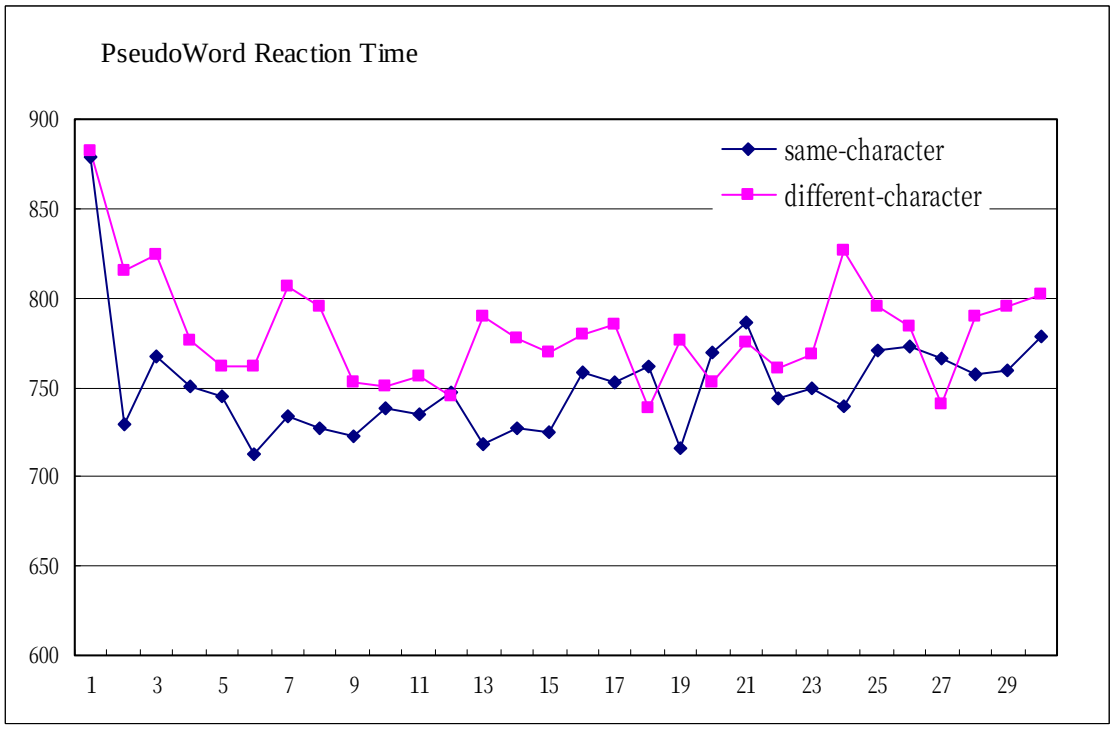
Exp. 3 (N=29)

Reaction time:

Word

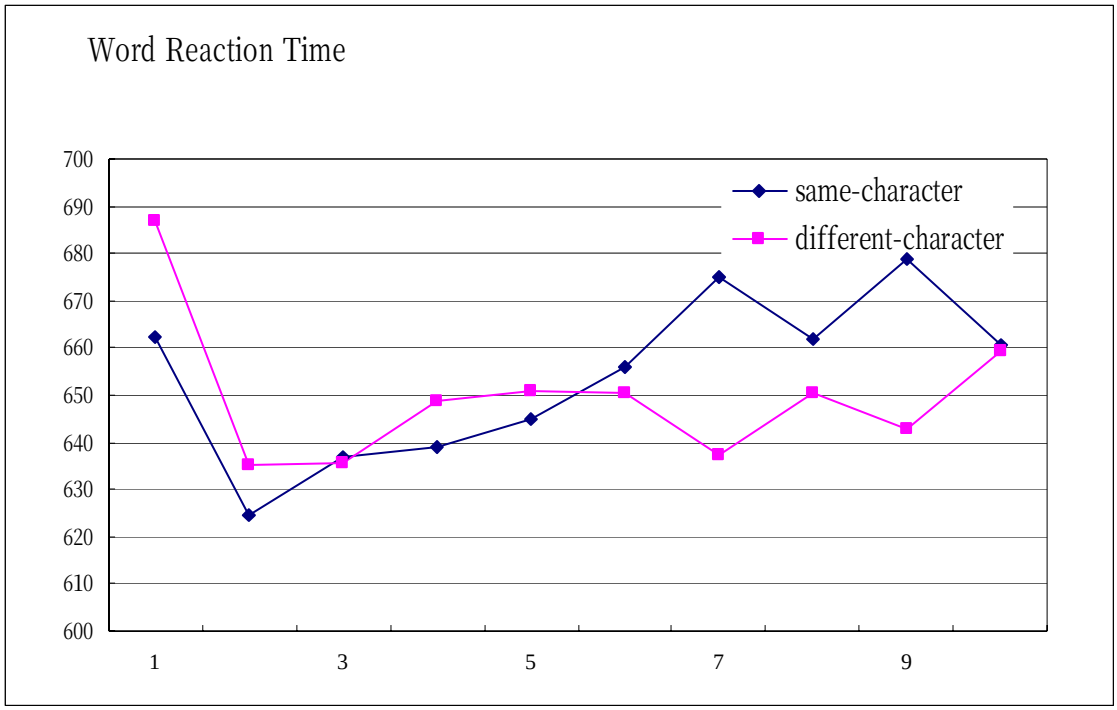


Pseudo-Word

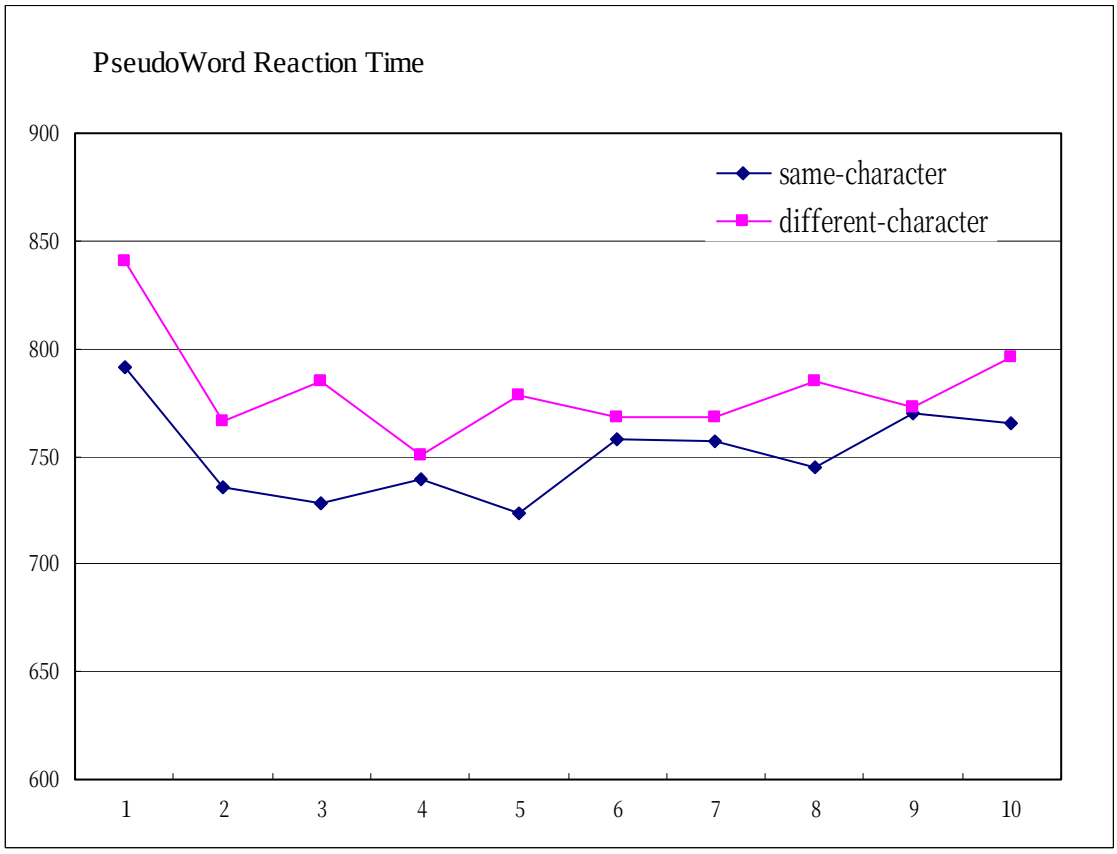


Reaction time (into ten blocks):

Word

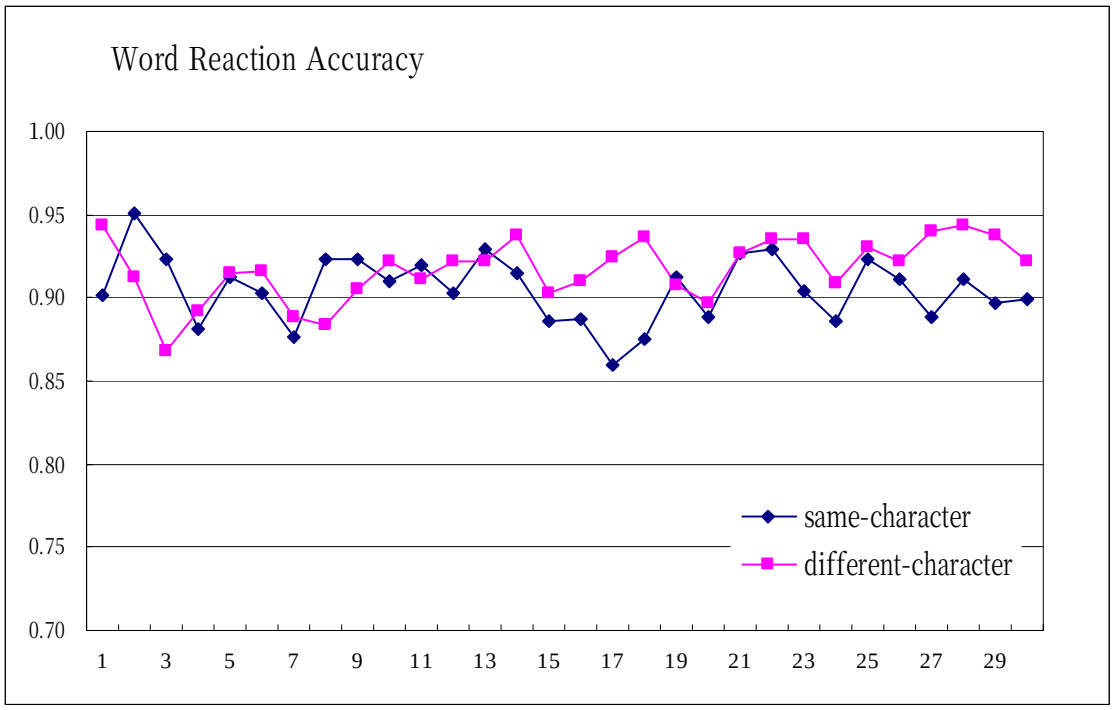


Pseudoword

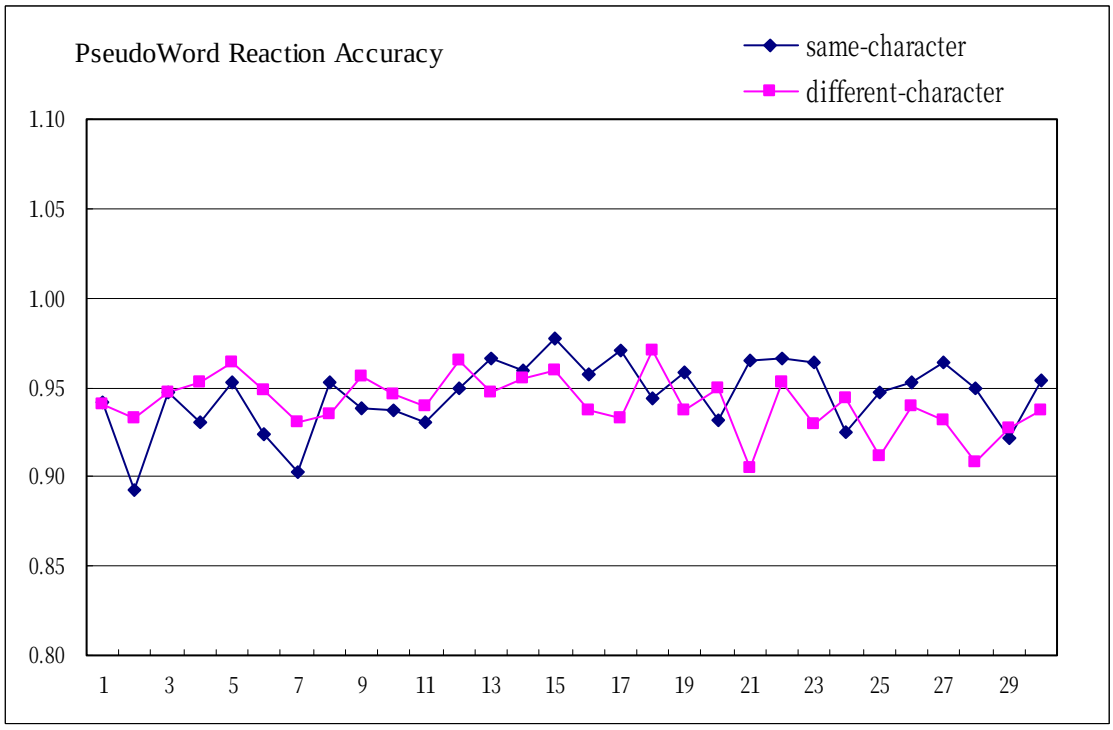


Accuracy

Word

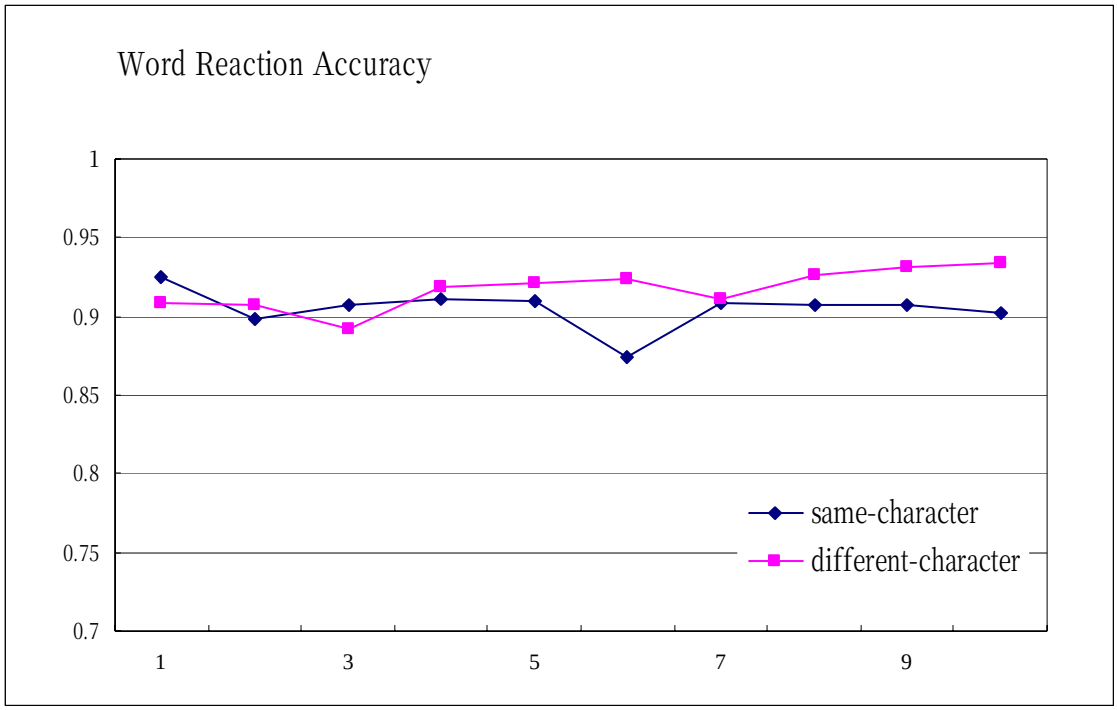


Pseudoword

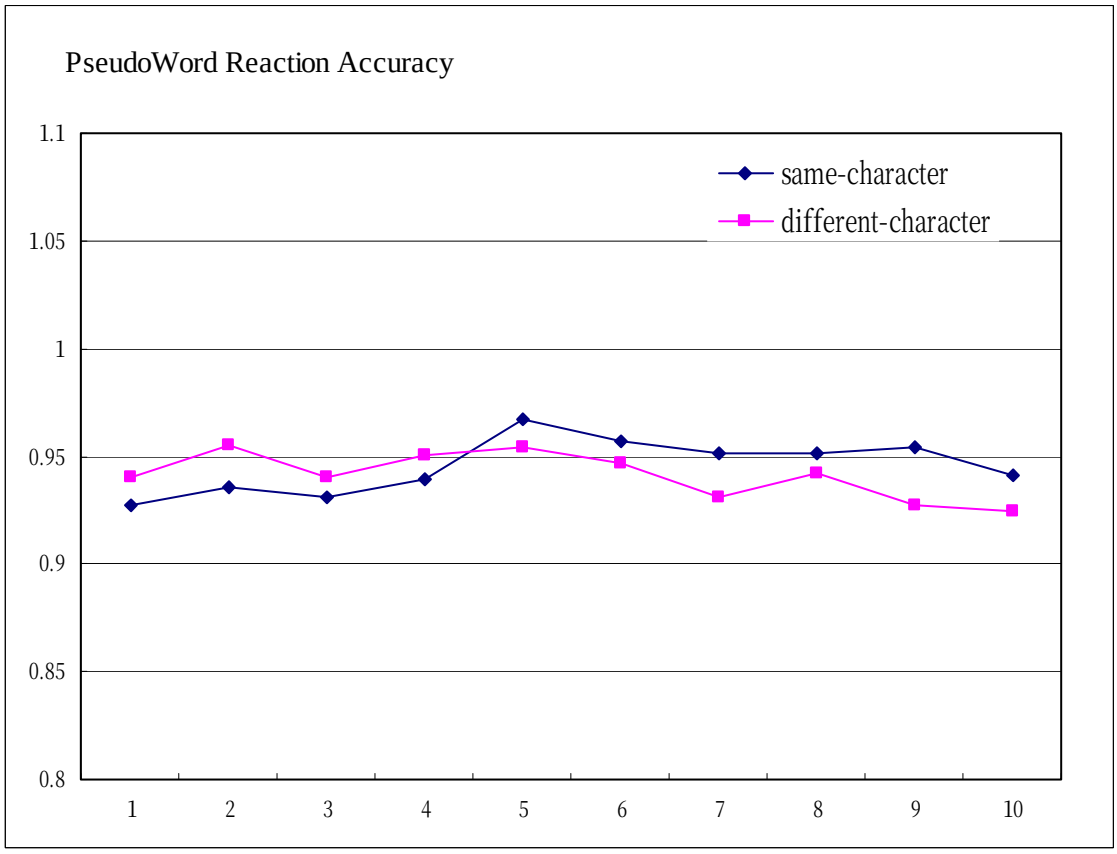


Accuracy (into ten blocks)

Word



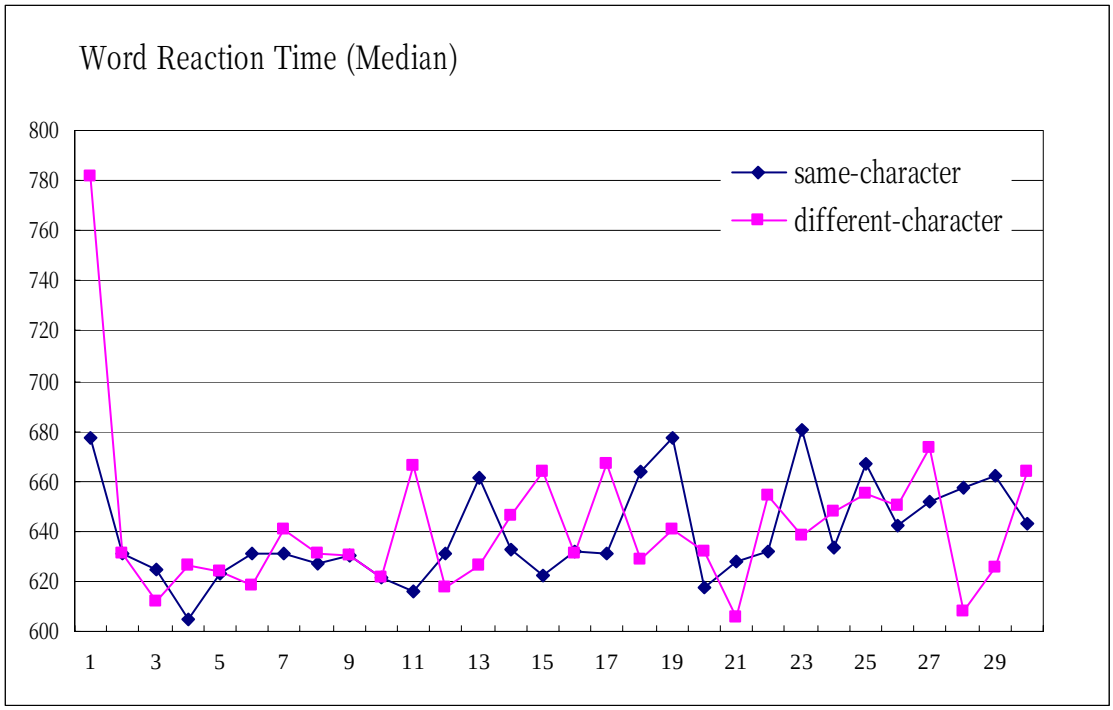
Pseudoword



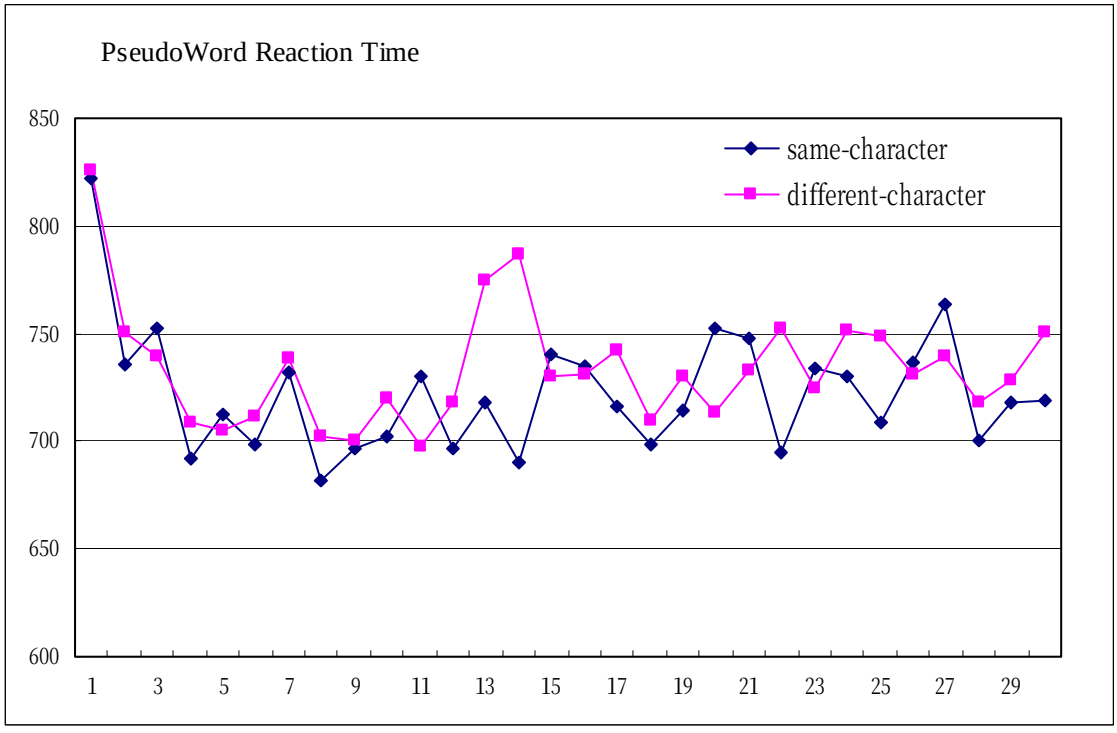
Exp. 3 (N=29)

Reaction time:

Word

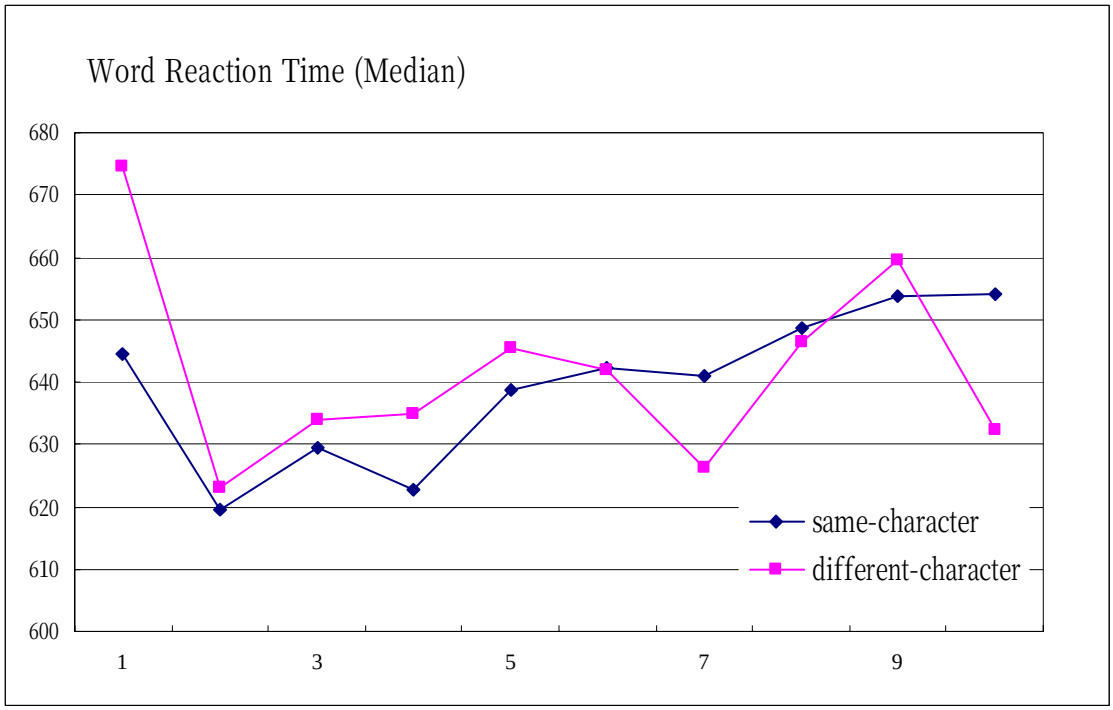


Pseudo-Word

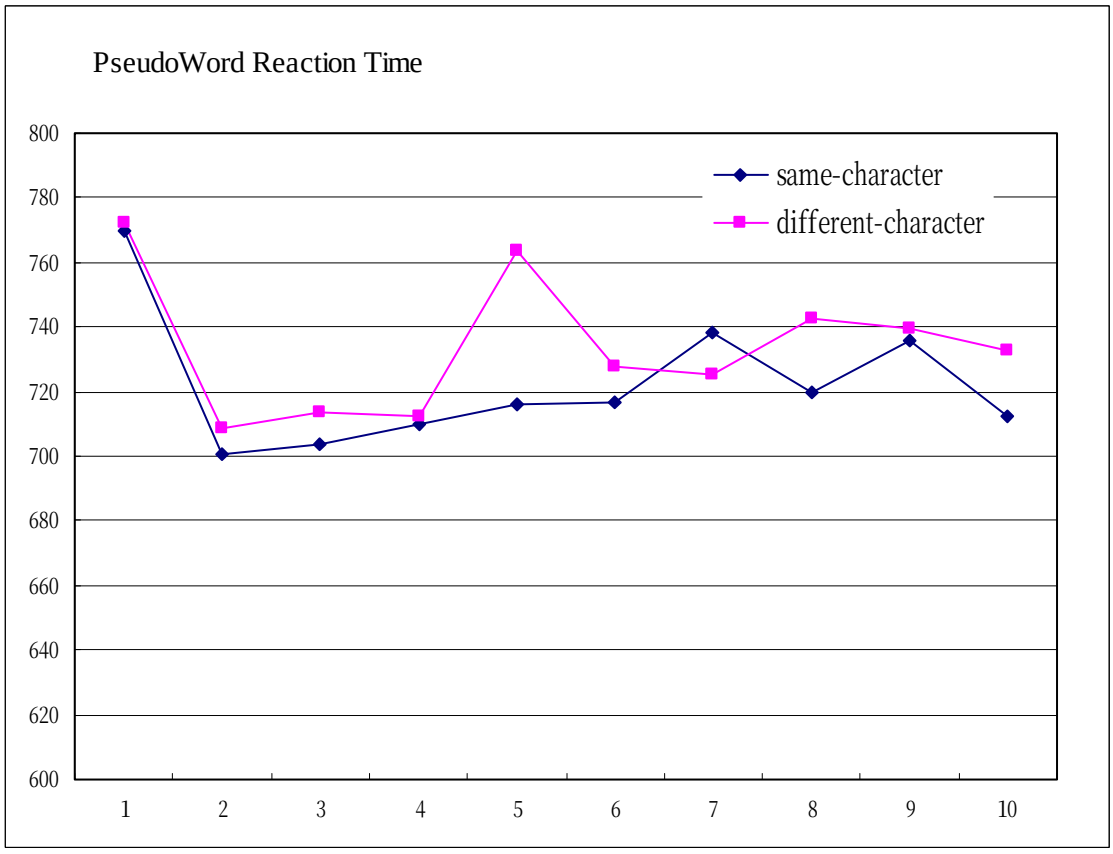


Reaction time (into ten blocks):

Word

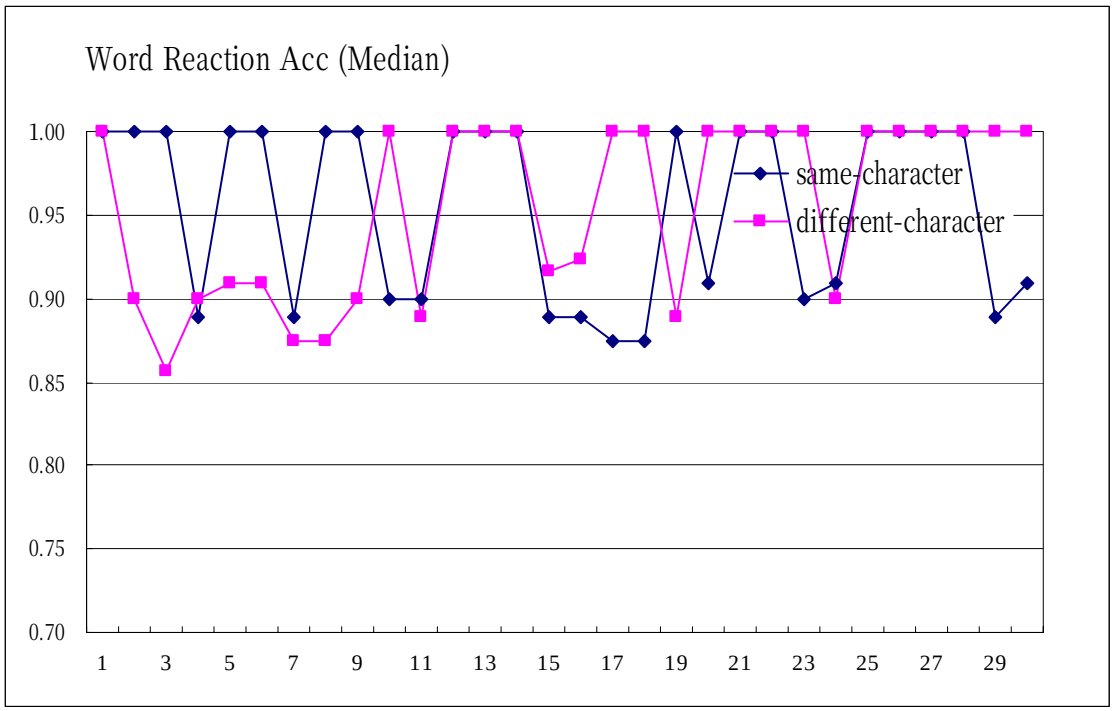


Pseudoword

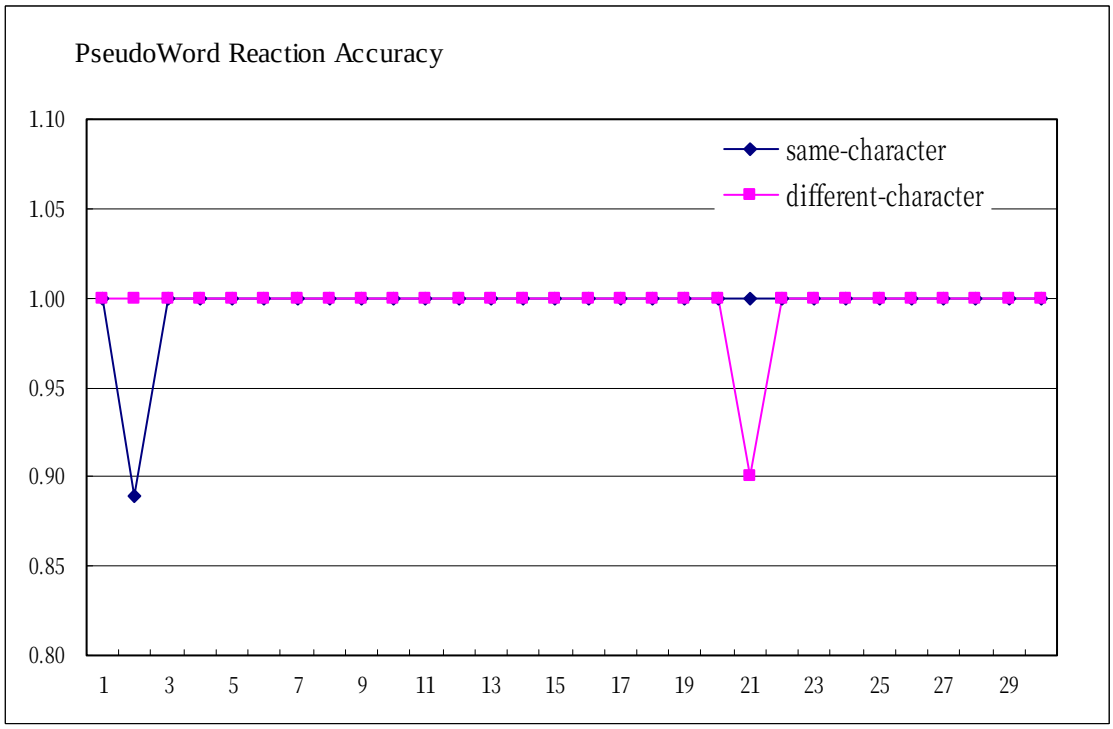


Accuracy

Word

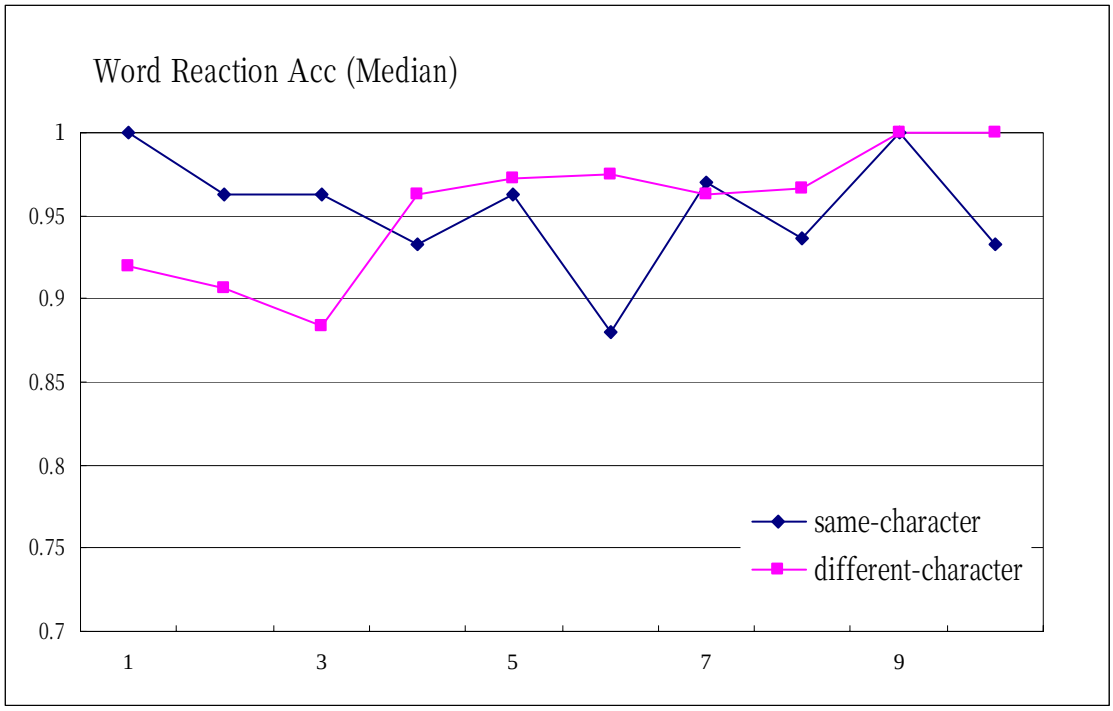


Pseudoword

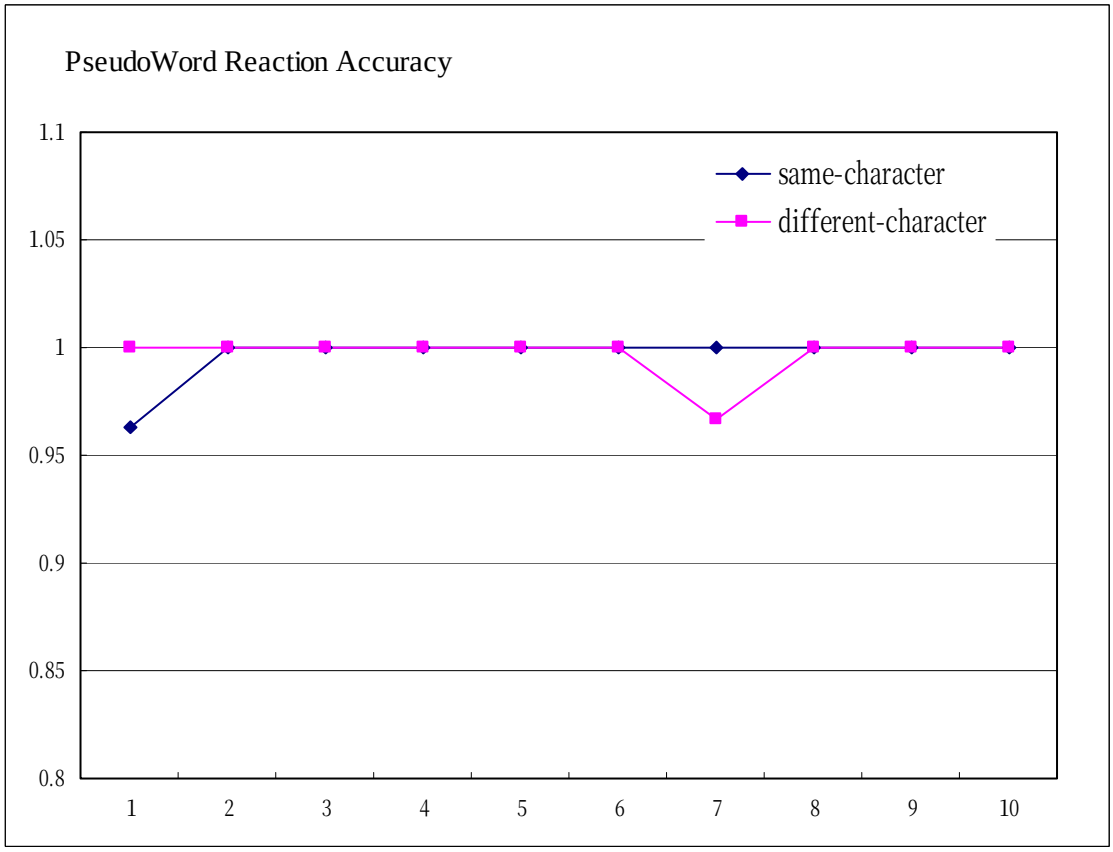


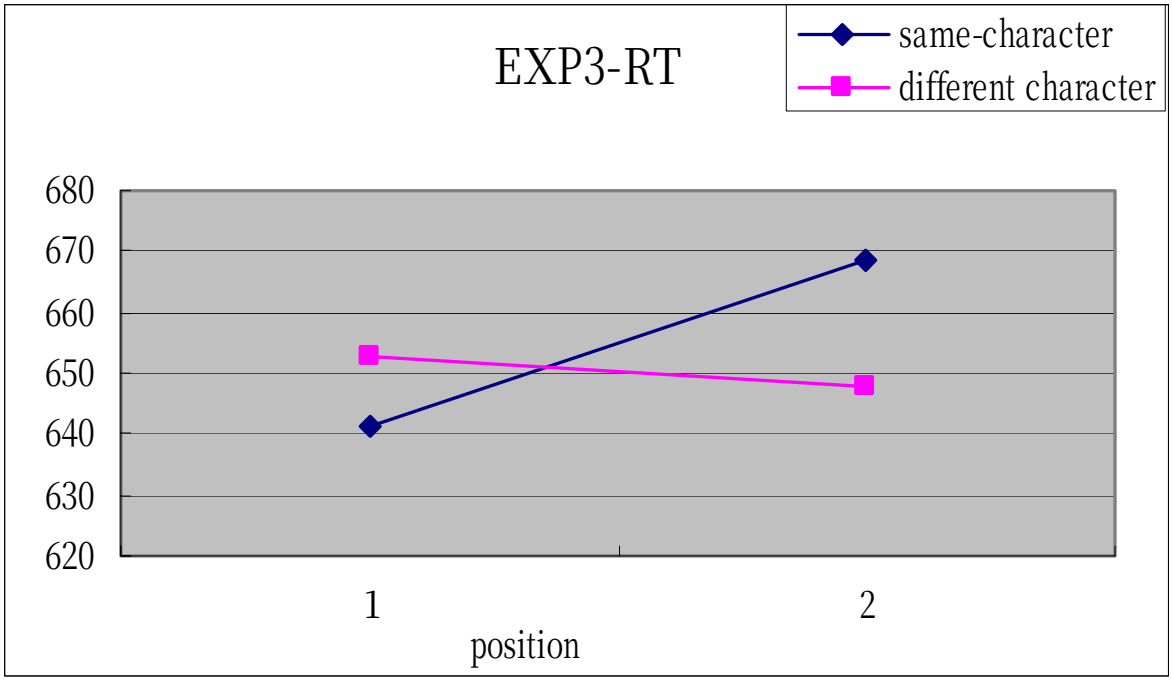
Accuracy (into ten blocks)

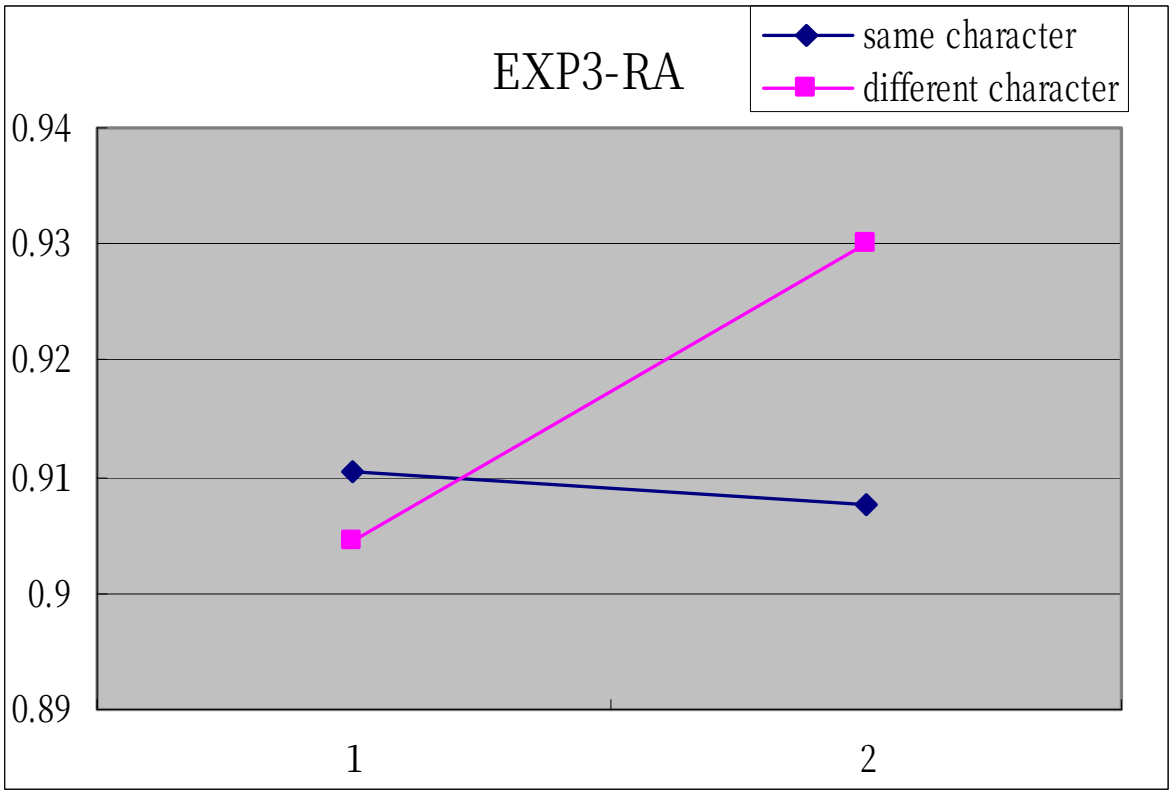
Word



Pseudoword




EXP3-RT
same-character
different character
680
670
660
650
640
630
620
1
2
position


EXP3-RA
same character
different character
0.94
0.93
0.92
0.91
0.9
0.89
1
2

EXP3-RT

Source	SS	df	MS	F	P
S	867057.2	28	30966.33		
A	597.149 1	1	597.149	0.427	0.5252
AS	39160.76	28	1398.598		
B	3732.091	1	3732.091	4.516	0.0402
BS	23137.7	28	826.347		
AB	7533.658	1	7533.658	10.309	0.0036
ABS	20461.23	28	730.758		

EXP3-RT

Simple Simple-Main and Interaction Effects of AB

Source SS df MS F P	SS	df	MS	F	P
Error for B[A(i)]	43598.93	56	778.552		
B[A(1)]	10935.36	1	10935.36	14.046	0.0007
B[A(2)]	330.394	1	330.394	0.424	0.5242
Error for A[B(j)]	59621.98	56	1064.678		
A[B(1)]	1944.386	1	1944.386	1.826	0.1788
A[B(2)] 6186.420 1 6186.420 5.811 0.0182	6186.42	1	6186.42	5.811	0.0182

EXP3-RA

Source	SS	df	MS	F	P
S	0.109	28	0.004		
A	0.002	1	0.002	2.088	0.1563
AS	0.026	28	0.001		
B	0.004	1	0.004	2.545	0.1183
BS	0.041	28	0.001		
AB	0.006	1	0.006	6.945	0.013
ABS	0.024	28	0.001		

EXP3-RA

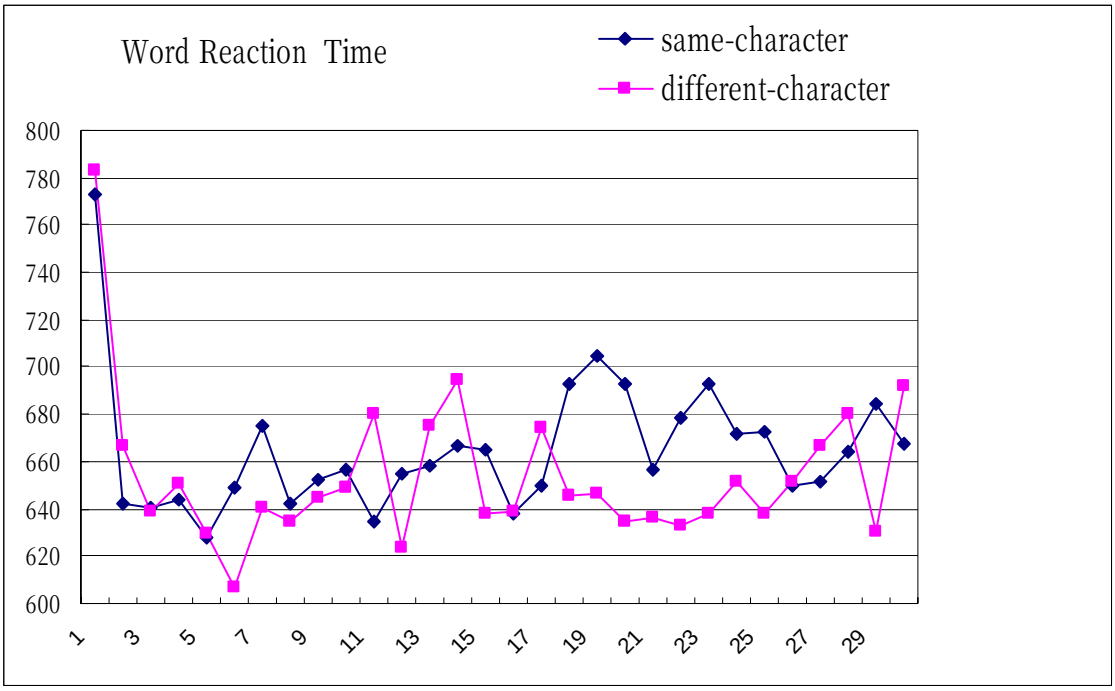
Simple Simple-Main and Interaction Effects of AB.

Source	SS	df	MS	F	P
Error for B[A(i)]	0.065	56	0.001		
B[A(1)]	0	1	0	0.107	0.6853
B[A(2)]	0.01	1	0.01	8.213	0.006
Error for A[B(j)]	0.05	56	0.001		
A[B(1)]	0.001	1	0.001	0.615	0.4423
A[B(2)] 0.007 1 0.007 8.225 0.0059	0.007	1	0.007	8.225	0.0059

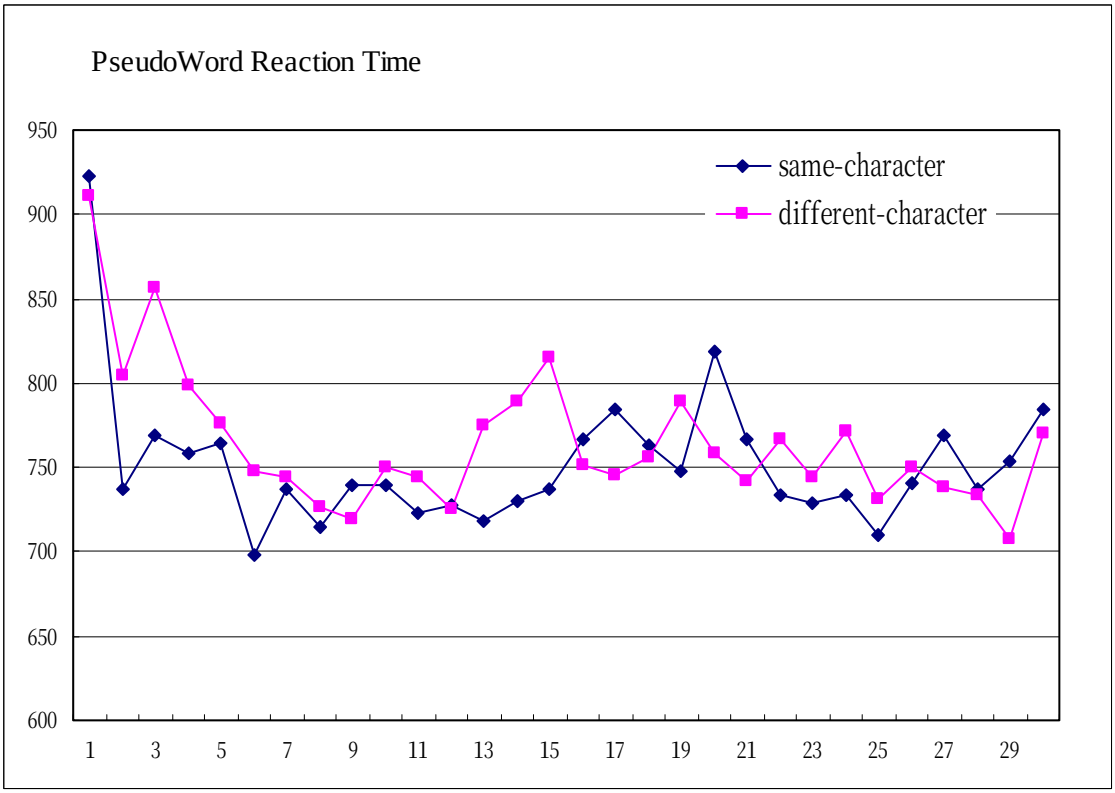
Exp. 3 (N=14)

Reaction time:

Word

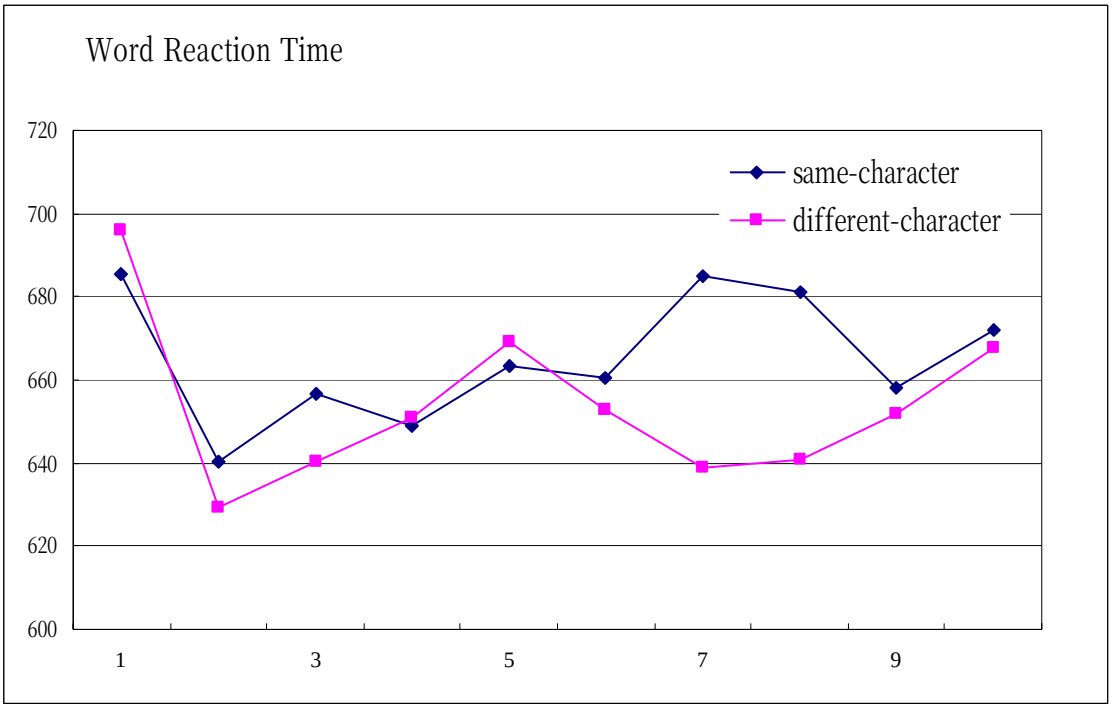


Pseudo-Word

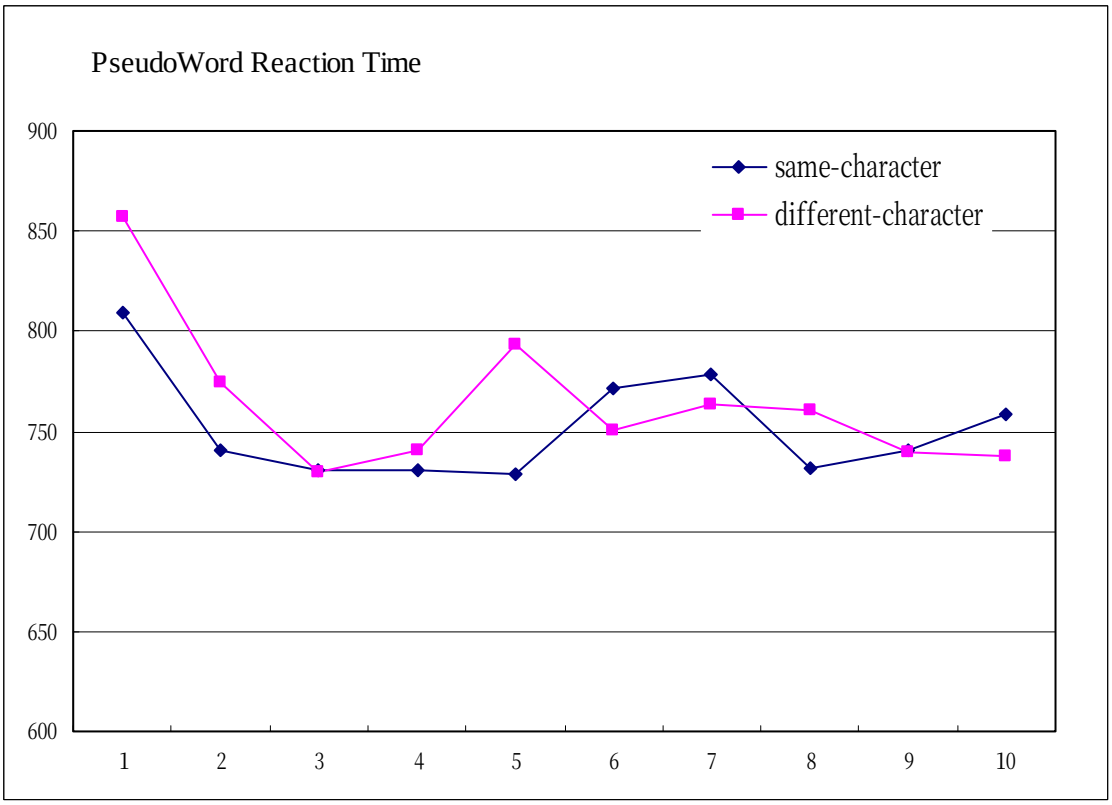


Reaction time (into ten blocks):

Word

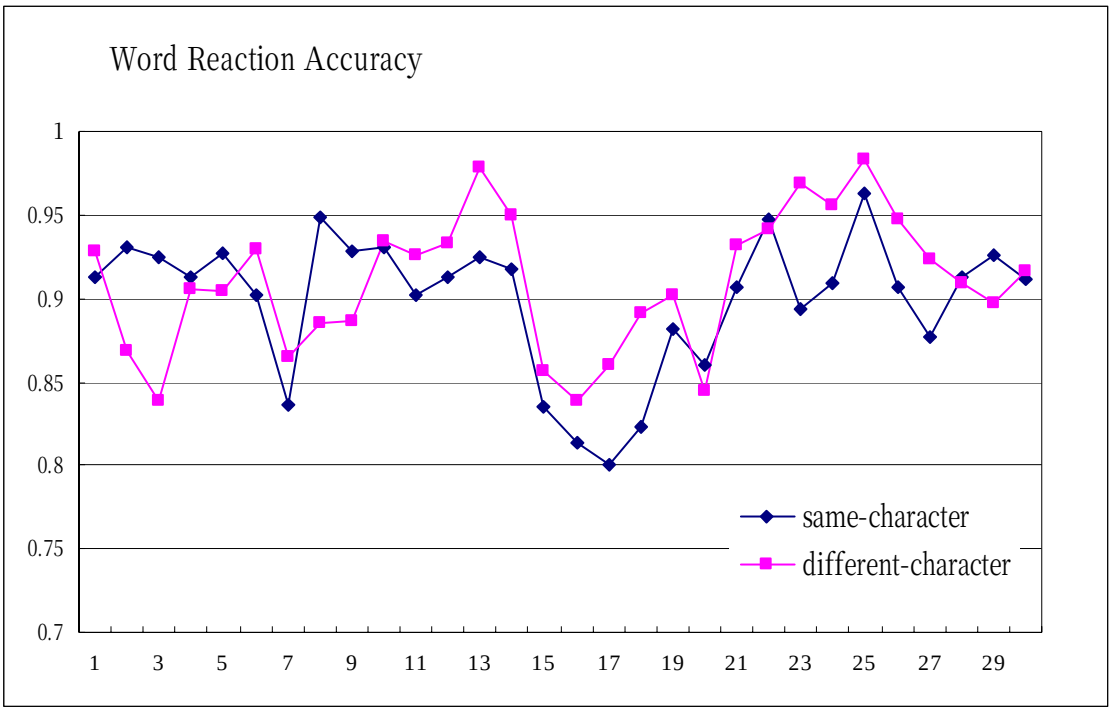


Pseudoword

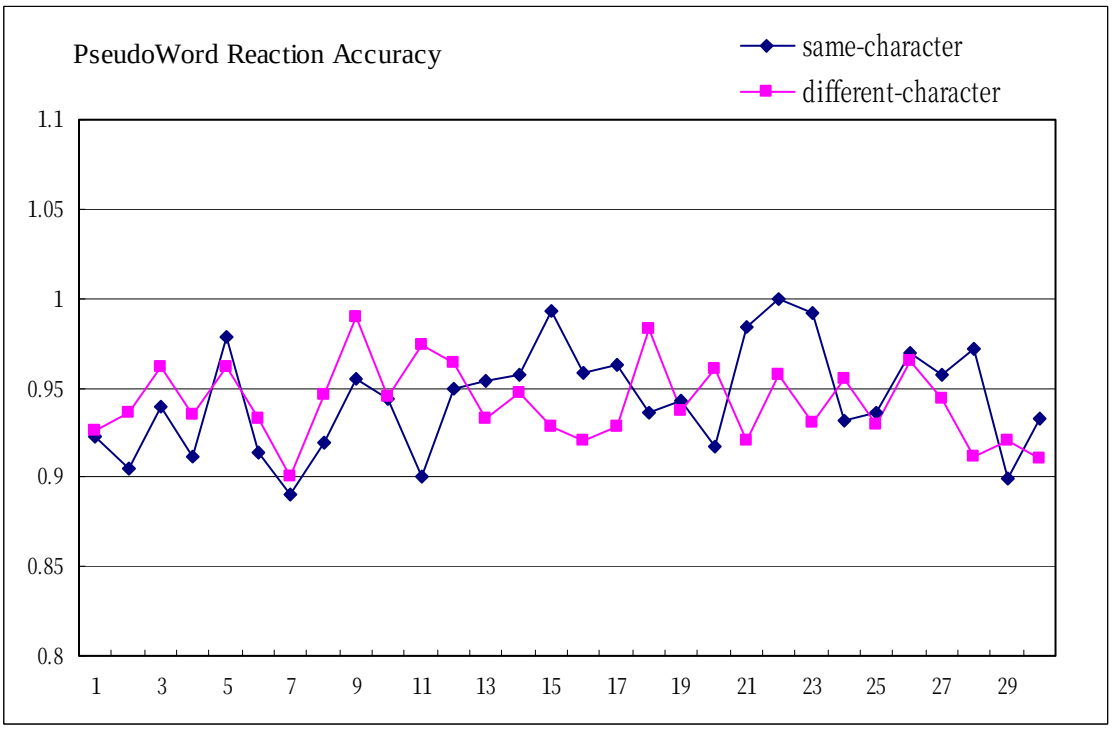


Accuracy

Word

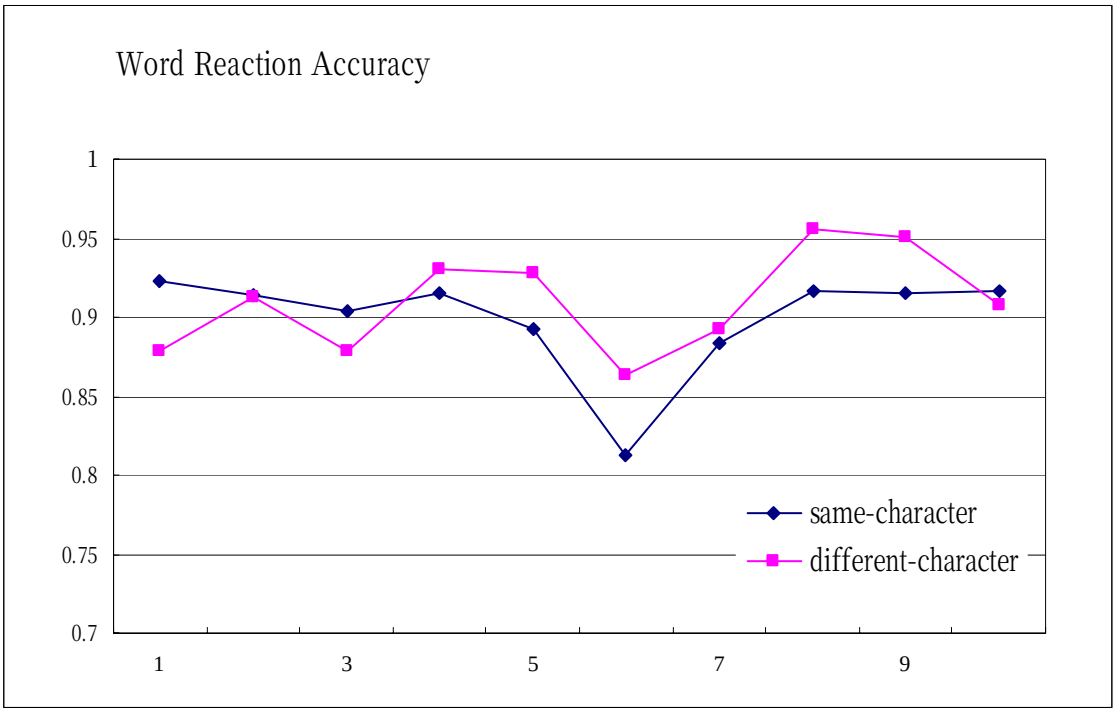


Pseudoword

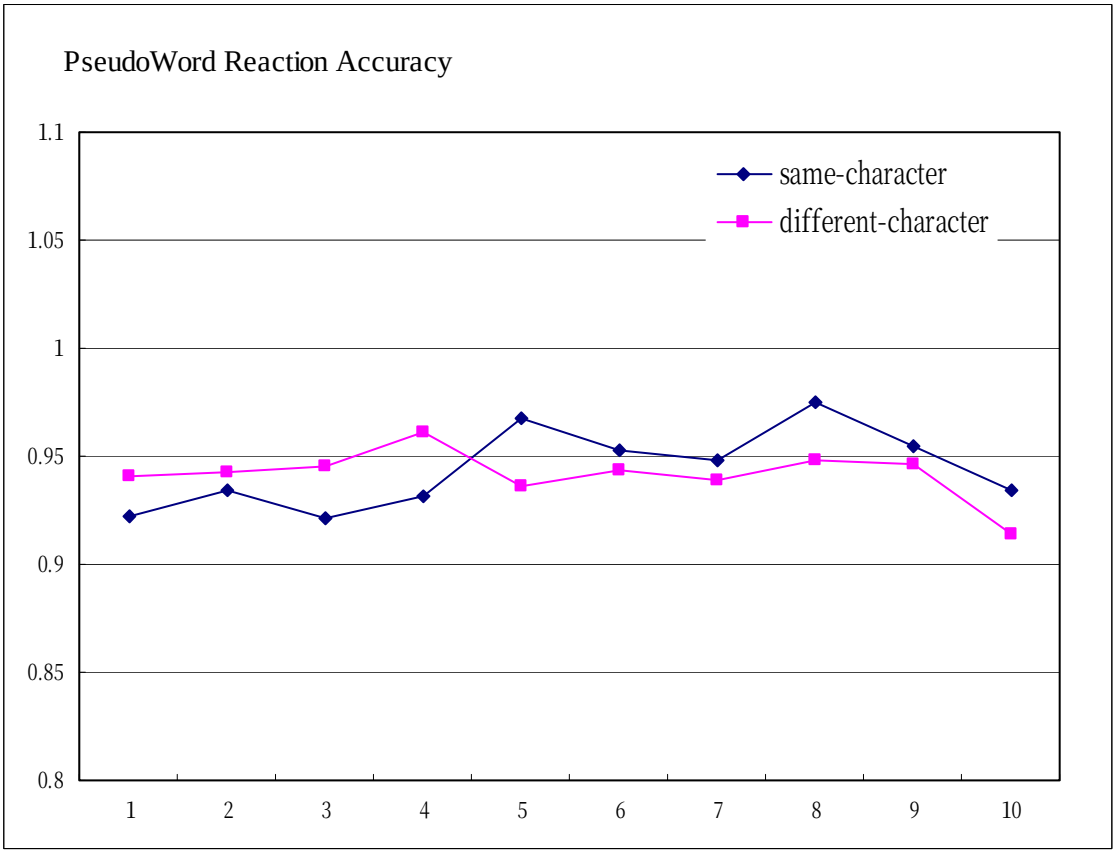


Accuracy (into ten blocks)

Word


Word Reaction Accuracy
1
0.95
0.9
0.85
0.8
0.75
0.7
1
3
5
7
9
same-character
different-character

Pseudoword


PseudoWord Reaction Accuracy
1.1
1.05
1
0.95
0.9
0.85
0.8
1
2
3
4
5
6
7
8
9
10
same-character
different-character

```
**************************************************************************
*                        General ANOVA Program                           *
*                           Vesion 3.0                                   *
*                  Chao-Ming Cheng & Shyue-Jyh Chern                     *
*                      Department of Psychology                          *
*                      National Taiwan University                        *
*                           Nov 19 1996                                  *
**************************************************************************
```

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp3.med
Output Device : 3wmed.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 30
Levels of S : 29
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1=	653.961[124.686]	A2=	649.663[110.890]

Means of Bj :

B1=	749.543[134.608]	B2=	642.445[96.287]
B3=	631.807[94.183]	B4=	641.219[110.574]
B5=	621.645[84.416]	B6=	626.647[103.191]

B7=	636.972[119.786]	B8=	635.911[102.528]
B9=	635.957[99.983]	B:=	646.135[119.076]
B11=	641.799[101.462]	B12=	643.509[113.617]
B13=	649.812[93.372]	B14=	647.839[113.632]
B15=	645.538[101.038]	B16=	635.772[95.031]
B17=	660.063[114.689]	B18=	663.714[122.521]
B19=	663.575[104.986]	B1:=	652.740[144.080]
B21=	651.556[164.291]	B22=	646.193[107.489]
B23=	681.096[175.769]	B24=	640.925[105.408]
B25=	666.215[136.767]	B26=	653.120[113.791]
B27=	662.798[118.359]	B28=	665.142[130.897]
B29=	645.795[92.779]	B2:=	668.882[106.708]

Means of AiBj :

A1B1=	726.896[131.996]	A1B2=	641.088[98.493]
A1B3=	618.415[88.297]	A1B4=	634.740[121.974]
A1B5=	610.682[79.534]	A1B6=	628.550[112.887]
A1B7=	636.338[122.879]	A1B8=	639.322[108.639]
A1B9=	635.542[110.583]	A1B:=	638.805[119.165]
A1B11=	633.512[103.190]	A1B12=	644.049[111.048]
A1B13=	651.732[88.062]	A1B14=	638.298[97.703]
A1B15=	644.093[101.450]	A1B16=	634.102[91.968]
A1B17=	660.962[123.999]	A1B18=	673.036[121.678]
A1B19=	680.323[119.203]	A1B1:=	663.339[151.515]
A1B21=	680.842[215.322]	A1B22=	647.002[114.334]
A1B23=	694.066[173.817]	A1B24=	644.540[117.662]
A1B25=	701.002[161.871]	A1B26=	663.284[135.491]
A1B27=	672.015[121.953]	A1B28=	662.901[126.387]
A1B29=	657.441[97.178]	A1B2:=	661.908[105.112]
A2B1=	772.190[133.379]	A2B2=	643.802[94.010]
A2B3=	645.198[97.906]	A2B4=	647.698[97.425]
A2B5=	632.608[87.669]	A2B6=	624.743[92.445]
A2B7=	637.605[116.607]	A2B8=	632.500[95.906]
A2B9=	636.371[88.114]	A2B:=	653.464[118.534]
A2B11=	650.086[99.014]	A2B12=	642.968[116.126]
A2B13=	647.893[98.358]	A2B14=	657.381[126.873]
A2B15=	646.982[100.603]	A2B16=	637.443[97.970]
A2B17=	659.164[104.547]	A2B18=	654.392[122.653]
A2B19=	646.827[85.288]	A2B1:=	642.140[135.412]
A2B21=	622.271[76.838]	A2B22=	645.385[100.171]
A2B23=	668.126[176.750]	A2B24=	637.311[91.385]

A2B25= 631.428[93.745] A2B26= 642.956[85.630]
A2B27= 653.581[113.909] A2B28= 667.383[135.220]
A2B29= 634.149[86.608] A2B2:= 675.856[107.831]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	12229631.661	28	436772.559		
A	8033.908	1	8033.908	0.543	0.4737
AS	414114.069	28	14789.788		
B	877479.293	29	30257.907	4.206	0.0000
BS	5841928.303	812	7194.493		
AB	235691.799	29	8127.303	1.427	0.0683
ABS	4624872.793	812	5695.656		

---

* means difference between row-mean & column-mean
come up 0.05 significant level.
** means difference between row-mean & column-mean
come up 0.01 significant level.

Data Range Error !
Bypass this datum .

MsError = 7194.492984
df(MsError) = 812
# of groups = 30
cell in group = 58
q(812,30).05 = 10.480000
q(812,30).01 = 0.000000
C(.05) = 116.720565
C(.01) = 0.000000

Label	B1	B2	B3	B4	B5	B6	B7
Means	749.543	642.445	631.807	641.219	621.645	626.647	636.972

B1	**	**	**	**	**	**
B2		**	**	**	**	**
B3				**	**	
B4		**		**	**	**
B5						
B6				**		
B7		**		**	**	
B8		**		**	**	
B9		**		**	**	
B:	**	**	**	**	**	**
B11		**	**	**	**	**
B12	**	**	**	**	**	**
B13	**	**	**	**	**	**
B14	**	**	**	**	**	**
B15	**	**	**	**	**	**
B16		**		**	**	
B17	**	**	**	**	**	**
B18	**	**	**	**	**	**
B19	**	**	**	**	**	**
B1:	**	**	**	**	**	**
B21	**	**	**	**	**	**
B22	**	**	**	**	**	**
B23	**	**	**	**	**	**
B24		**		**	**	**
B25	**	**	**	**	**	**
B26	**	**	**	**	**	**
B27	**	**	**	**	**	**
B28	**	**	**	**	**	**
B29	**	**	**	**	**	**
B2:	**	**	**	**	**	**

Label	B8	B9	B:	B11	B12	B13	B14
Means	635.911	635.957	646.135	641.799	643.509	649.812	647.839

B1	**	**	**	**	**	**	**
B2	**	**		**			
B3							
B4	**	**					
B5							
B6							
B7	**	**					
B8							
B9	**						
B:	**	**		**	**		
B11	**	**					
B12	**	**		**			
B13	**	**	**	**	**		**
B14	**	**	**	**	**		
B15	**	**		**	**		
B16							
B17	**	**	**	**	**	**	**
B18	**	**	**	**	**	**	**
B19	**	**	**	**	**	**	**
B1:	**	**	**	**	**	**	**
B21	**	**	**	**	**	**	**
B22	**	**	**	**	**		
B23	**	**	**	**	**	**	**
B24	**	**					
B25	**	**	**	**	**	**	**
B26	**	**	**	**	**	**	**
B27	**	**	**	**	**	**	**
B28	**	**	**	**	**	**	**
B29	**	**		**	**		
B2:	**	**	**	**	**	**	**

Label	B15	B16	B17	B18	B19	B1:	B21
Means	645.538	635.772	660.063	663.714	663.575	652.740	651.556

B1	**	**	**	**	**	**	**
B2		**					
B3							
B4		**					
B5							

B6							
B7		**					
B8		**					
B9		**					
B:	**	**					
B11		**					
B12		**					
B13	**	**					
B14	**	**					
B15		**					
B16							
B17	**	**				**	**
B18	**	**	**		**	**	**
B19	**	**	**			**	**
B1:	**	**					**
B21	**	**					
B22	**	**					
B23	**	**	**	**	**	**	**
B24		**					
B25	**	**	**	**	**	**	**
B26	**	**				**	**
B27	**	**	**			**	**
B28	**	**	**	**	**	**	**
B29	**	**					
B2:	**	**	**	**	**	**	**

Label	B22	B23	B24	B25	B26	B27	B28
Means	646.193	681.096	640.925	666.215	653.120	662.798	665.142

B1	**	**	**	**	**	**	**
B2			**				
B3							
B4			**				
B5							
B6							
B7							
B8							
B9							
B:			**				

B11						
B12						
B13	**					
B14	**					
B15						
B16						
B17	**			**		
B18	**			**	**	
B19	**			**	**	
B1:	**					
B21	**					
B22						
B23	**		**	**	**	**
B24						
B25	**			**	**	**
B26	**					
B27	**			**		
B28	**			**	**	
B29						
B2:	**		**	**	**	**

Label	B29	B2:
Means	645.795	668.882
B1	**	**
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
B:	**	
B11		
B12		
B13	**	
B14	**	
B15		

B16 |
B17 | **
B18 | **
B19 | **
B1: | **
B21 | **
B22 | **
B23 | ** **
B24 |
B25 | **
B26 | **
B27 | **
B28 | **
B29 |
B2: | **

```
**************************************************************************
*                        General ANOVA Program                           *
*                           Vesion 3.0                                   *
*                  Chao-Ming Cheng & Shyue-Jyh Chern                     *
*                        Department of Psychology                        *
*                        National Taiwan University                      *
*                           Nov 19 1996                                  *
**************************************************************************
```

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp3.acc
Output Device : 3wacc.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 30
Levels of S : 29
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1=	0.905[	0.117]	A2=	0.917[	0.105]

Means of Bj :

B1=	0.923[	0.128]	B2=	0.932[	0.092]
B3=	0.896[	0.108]	B4=	0.886[	0.126]

B5=	0.913[	0.109]	B6=	0.909[	0.108]
B7=	0.882[	0.114]	B8=	0.903[	0.108]
B9=	0.914[	0.096]	B:=	0.916[	0.098]
B11=	0.915[	0.086]	B12=	0.913[	0.121]
B13=	0.925[	0.096]	B14=	0.927[	0.098]
B15=	0.894[	0.123]	B16=	0.898[	0.114]
B17=	0.892[	0.133]	B18=	0.906[	0.115]
B19=	0.910[	0.107]	B1:=	0.893[	0.135]
B21=	0.927[	0.105]	B22=	0.932[	0.103]
B23=	0.919[	0.094]	B24=	0.897[	0.112]
B25=	0.927[	0.104]	B26=	0.917[	0.114]
B27=	0.914[	0.121]	B28=	0.927[	0.102]
B29=	0.917[	0.104]	B2:=	0.911[	0.112]

Means of AiBj :

A1B1=	0.902[	0.139]	A1B2=	0.951[	0.087]
A1B3=	0.924[	0.099]	A1B4=	0.881[	0.124]
A1B5=	0.912[	0.115]	A1B6=	0.903[	0.126]
A1B7=	0.877[	0.121]	A1B8=	0.923[	0.096]
A1B9=	0.924[	0.086]	A1B:=	0.910[	0.099]
A1B11=	0.920[	0.085]	A1B12=	0.903[	0.142]
A1B13=	0.929[	0.087]	A1B14=	0.915[	0.098]
A1B15=	0.886[	0.117]	A1B16=	0.887[	0.118]
A1B17=	0.859[	0.157]	A1B18=	0.875[	0.129]
A1B19=	0.912[	0.102]	A1B1:=	0.888[	0.140]
A1B21=	0.927[	0.103]	A1B22=	0.930[	0.094]
A1B23=	0.904[	0.099]	A1B24=	0.886[	0.131]
A1B25=	0.924[	0.093]	A1B26=	0.911[	0.122]
A1B27=	0.888[	0.147]	A1B28=	0.911[	0.116]
A1B29=	0.897[	0.114]	A1B2:=	0.899[	0.116]
A2B1=	0.944[	0.112]	A2B2=	0.912[	0.094]
A2B3=	0.868[	0.108]	A2B4=	0.892[	0.128]
A2B5=	0.914[	0.103]	A2B6=	0.915[	0.087]
A2B7=	0.888[	0.107]	A2B8=	0.884[	0.115]
A2B9=	0.905[	0.104]	A2B:=	0.922[	0.096]
A2B11=	0.911[	0.087]	A2B12=	0.922[	0.094]
A2B13=	0.922[	0.104]	A2B14=	0.938[	0.096]
A2B15=	0.902[	0.129]	A2B16=	0.909[	0.108]
A2B17=	0.924[	0.094]	A2B18=	0.936[	0.088]
A2B19=	0.907[	0.112]	A2B1:=	0.897[	0.130]
A2B21=	0.927[	0.108]	A2B22=	0.935[	0.110]

A2B23=	0.935[	0.087]	A2B24=	0.909[	0.088]
A2B25=	0.930[	0.114]	A2B26=	0.922[	0.104]
A2B27=	0.940[	0.078]	A2B28=	0.943[	0.083]
A2B29=	0.938[	0.089]	A2B2:=	0.922[	0.106]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	1.656	28	0.059		
A	0.062	1	0.062	5.935	0.0203
AS	0.291	28	0.010		
B	0.321	29	0.011	0.747	0.6590
BS	12.032	812	0.015		
AB	0.318	29	0.011	1.319	0.1226
ABS	6.761	812	0.008		

****
* General ANOVA Program *
* Vesion 3.0 *
* Chao-Ming Cheng & Shyue-Jyh Chern *
* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp3.med
Output Device : 3NWmed.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 30
Levels of S : 29
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1= 731.141[214.076] A2= 755.586[247.656]

Means of Bj :

B1= 880.108[204.737] B2= 771.924[249.575]
B3= 778.541[259.937] B4= 763.069[213.176]

B5=	753.202[	180.098]	B6=	736.699[	183.232]
B7=	770.309[	234.970]	B8=	760.963[	300.478]
B9=	737.646[	166.268]	B:=	743.958[	173.118]
B11=	745.243[	170.671]	B12=	745.702[	195.526]
B13=	753.726[	167.642]	B14=	752.117[	203.500]
B15=	747.067[	175.159]	B16=	769.003[	211.885]
B17=	769.228[	234.882]	B18=	750.044[	194.040]
B19=	746.470[	155.959]	B1:=	761.031[	161.733]
B21=	780.419[	231.343]	B22=	752.123[	151.275]
B23=	759.183[	194.040]	B24=	587.516[	322.571]
B25=	750.159[	263.025]	B26=	438.058[	379.949]
B27=	739.825[	183.246]	B28=	737.533[	183.836]
B29=	763.923[	252.881]	B2:=	756.114[	250.441]

Means of AiBj :

A1B1=	878.576[	203.617]	A1B2=	729.142[	124.429]
A1B3=	767.633[	145.774]	A1B4=	750.467[	216.351]
A1B5=	744.761[	164.342]	A1B6=	712.213[	142.733]
A1B7=	734.031[	160.546]	A1B8=	727.219[	174.593]
A1B9=	722.873[	154.835]	A1B:=	737.805[	144.639]
A1B11=	734.523[	132.093]	A1B12=	746.855[	214.863]
A1B13=	718.298[	115.541]	A1B14=	727.341[	196.427]
A1B15=	725.074[	145.565]	A1B16=	758.094[	179.528]
A1B17=	753.306[	158.824]	A1B18=	761.548[	234.134]
A1B19=	716.511[	100.774]	A1B1:=	769.253[	152.593]
A1B21=	785.816[	237.964]	A1B22=	744.124[	160.120]
A1B23=	749.527[	204.755]	A1B24=	549.832[	329.203]
A1B25=	770.155[	313.662]	A1B26=	385.231[	385.942]
A1B27=	739.193[	216.270]	A1B28=	756.869[	180.435]
A1B29=	759.371[	173.241]	A1B2:=	778.595[	199.761]
A2B1=	881.641[	205.839]	A2B2=	814.705[	324.704]
A2B3=	789.449[	337.115]	A2B4=	775.671[	209.195]
A2B5=	761.644[	194.216]	A2B6=	761.186[	213.486]
A2B7=	806.586[	286.382]	A2B8=	794.707[	384.466]
A2B9=	752.418[	175.727]	A2B:=	750.110[	197.340]
A2B11=	755.963[	201.442]	A2B12=	744.548[	174.046]
A2B13=	789.154[	200.867]	A2B14=	776.892[	207.397]
A2B15=	769.059[	198.002]	A2B16=	779.911[	239.421]
A2B17=	785.150[	290.872]	A2B18=	738.541[	142.196]
A2B19=	776.430[	191.561]	A2B1:=	752.809[	169.986]
A2B21=	775.023[	224.397]	A2B22=	760.123[	141.428]

A2B23=	768.840[	182.188]	A2B24= 625.200[311.271]
A2B25=	730.162[	197.940]	A2B26= 490.885[366.320]
A2B27=	740.457[	142.776]	A2B28= 718.197[185.167]
A2B29=	768.475[	312.800]	A2B2:= 733.633[290.734]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	35396634.525	28	1264165.519		
A	259925.466	1	259925.466	9.829	0.0042
AS	740420.482	28	26443.589		
B	8359434.026	29	288256.346	9.447	0.0000
BS	24775389.095	812	30511.563		
AB	617514.738	29	21293.612	0.741	0.6507
ABS	23341735.625	812	28745.980		

---

* means difference between row-mean & column-mean
come up 0.05 significant level.

** means difference between row-mean & column-mean
come up 0.01 significant level.

Data Range Error !
Bypass this datum .

MsError = 30511.562925
df(MsError) = 812
# of groups = 30
cell in group = 58
q(812,30).05 = 10.480000
q(812,30).01 = 0.000000
C(.05) = 240.369585

C(.01) = 0.000000

Label	B1	B2	B3	B4	B5	B6	B7
Means	880.108	771.924	778.541	763.069	753.202	736.699	770.309
B1		**	**	**	**	**	**
B2				**	**	**	**
B3		**		**	**	**	**
B4					**	**	
B5						**	
B6							
B7				**	**	**	
B8					**	**	
B9						**	
B:						**	
B11						**	
B12						**	
B13					**	**	
B14						**	
B15						**	
B16				**	**	**	
B17				**	**	**	
B18						**	
B19						**	
B1:					**	**	
B21		**	**	**	**	**	**
B22						**	
B23					**	**	
B24							
B25						**	
B26							
B27						**	
B28						**	
B29				**	**	**	
B2:					**	**	

Label	B8	B9	B:	B11	B12	B13	B14
Means	760.963	737.646	743.958	745.243	745.702	753.726	752.117

B1	**	**	**	**	**	**	**
B2	**	**	**	**	**	**	**
B3	**	**	**	**	**	**	**
B4	**	**	**	**	**	**	**
B5		**	**	**	**		**
B6							
B7	**	**	**	**	**	**	**
B8		**	**	**	**	**	**
B9							
B:		**					
B11		**	**				
B12		**	**	**			
B13		**	**	**	**		**
B14		**	**	**	**		
B15		**	**	**	**		
B16	**	**	**	**	**	**	**
B17	**	**	**	**	**	**	**
B18		**	**	**	**		
B19		**	**	**	**		
B1:	**	**	**	**	**	**	**
B21	**	**	**	**	**	**	**
B22		**	**	**	**		**
B23		**	**	**	**	**	**
B24							
B25		**	**	**	**		
B26							
B27		**					
B28							
B29	**	**	**	**	**	**	**
B2:		**	**	**	**	**	**

Label	B15	B16	B17	B18	B19	B1:	B21
Means	747.067	769.003	769.228	750.044	746.470	761.031	780.419

B1	**	**	**	**	**	**	**
B2	**	**	**	**	**	**	
B3	**	**	**	**	**	**	
B4	**			**	**	**	

B5	**			**	**		
B6							
B7	**	**	**	**	**	**	
B8	**			**	**		
B9							
B:							
B11							
B12							
B13	**			**	**		
B14	**			**	**		
B15					**		
B16	**			**	**	**	
B17	**	**		**	**	**	
B18	**				**		
B19							
B1:	**			**	**		
B21	**	**	**	**	**	**	
B22	**			**	**		
B23	**			**	**		
B24							
B25	**			**	**		
B26							
B27							
B28							
B29	**			**	**	**	
B2:	**			**	**		

Label	B22	B23	B24	B25	B26	B27	B28
Means	752.123	759.183	587.516	750.159	438.058	739.825	737.533

B1	**	**	**	**	**	**	**
B2	**	**	**	**	**	**	**
B3	**	**	**	**	**	**	**
B4	**	**	**	**	**	**	**
B5	**		**	**	**	**	**
B6			**		**		
B7	**	**	**	**	**	**	**
B8	**	**	**	**	**	**	**
B9			**		**		**

B:			**		**	**	**
B11			**		**	**	**
B12			**		**	**	**
B13	**		**	**	**	**	**
B14			**	**	**	**	**
B15			**		**	**	**
B16	**	**	**	**	**	**	**
B17	**	**	**	**	**	**	**
B18			**		**	**	**
B19			**		**	**	**
B1:	**	**	**	**	**	**	**
B21	**	**	**	**	**	**	**
B22			**	**	**	**	**
B23	**		**	**	**	**	**
B24					**		
B25			**		**	**	**
B26							
B27			**		**		**
B28			**		**		
B29	**	**	**	**	**	**	**
B2:	**		**	**	**	**	**

Label	B29	B2:
Means	763.923	756.114
B1	**	**
B2	**	**
B3	**	**
B4		**
B5		
B6		
B7	**	**
B8		**
B9		
B:		
B11		
B12		
B13		
B14		

B15 |
B16 | ** **
B17 | ** **
B18 |
B19 |
B1: | **
B21 | ** **
B22 |
B23 | **
B24 |
B25 |
B26 |
B27 |
B28 |
B29 | **
B2: |

****
* General ANOVA Program *
* Vesion 3.0 *
* Chao-Ming Cheng & Shyue-Jyh Chern *
* Department of Psychology *
* National Taiwan University *
* Nov 19 1996 *
****

General Information

Experimental Design : ABS
No. of Variables (Including Ss) : 3
No. of Between-Ss Variables : 0
No. of Within-Ss Variables : 2
Data File Name : duckexp3.acc
Output Device : 3NWACC.out
Within Subject Variable 1 : A
Within Subject Variable 2 : B
Subject Variable : S
Levels of A : 2
Levels of B : 30
Levels of S : 29
Significant criterion : 0.050000
No transformation !

Cell Means & SD

Means of Ai :

A1=	0.946[	0.093]	A2=	0.941[	0.093]

Means of Bj :

B1=	0.941[	0.103]	B2=	0.913[	0.110]
B3=	0.947[	0.082]	B4=	0.942[	0.092]

B5=	0.959[	0.089]	B6=	0.936[	0.077]
B7=	0.917[	0.123]	B8=	0.944[	0.094]
B9=	0.947[	0.087]	B:=	0.941[	0.098]
B11=	0.935[	0.103]	B12=	0.957[	0.072]
B13=	0.957[	0.076]	B14=	0.957[	0.079]
B15=	0.968[	0.071]	B16=	0.947[	0.090]
B17=	0.951[	0.078]	B18=	0.958[	0.086]
B19=	0.948[	0.093]	B1:=	0.941[	0.088]
B21=	0.935[	0.090]	B22=	0.959[	0.079]
B23=	0.946[	0.082]	B24=	0.934[	0.093]
B25=	0.929[	0.104]	B26=	0.946[	0.087]
B27=	0.948[	0.090]	B28=	0.929[	0.114]
B29=	0.925[	0.120]	B2:=	0.945[	0.086]

Means of AiBj :

A1B1=	0.942[	0.109]	A1B2=	0.893[	0.130]
A1B3=	0.947[	0.084]	A1B4=	0.930[	0.100]
A1B5=	0.953[	0.104]	A1B6=	0.924[	0.083]
A1B7=	0.903[	0.126]	A1B8=	0.953[	0.079]
A1B9=	0.939[	0.094]	A1B:=	0.937[	0.084]
A1B11=	0.931[	0.110]	A1B12=	0.949[	0.075]
A1B13=	0.966[	0.080]	A1B14=	0.960[	0.080]
A1B15=	0.977[	0.052]	A1B16=	0.957[	0.081]
A1B17=	0.970[	0.053]	A1B18=	0.944[	0.105]
A1B19=	0.958[	0.080]	A1B1:=	0.931[	0.093]
A1B21=	0.965[	0.058]	A1B22=	0.966[	0.077]
A1B23=	0.964[	0.063]	A1B24=	0.925[	0.097]
A1B25=	0.947[	0.098]	A1B26=	0.952[	0.083]
A1B27=	0.964[	0.067]	A1B28=	0.949[	0.081]
A1B29=	0.922[	0.136]	A1B2:=	0.954[	0.086]
A2B1=	0.940[	0.097]	A2B2=	0.933[	0.081]
A2B3=	0.947[	0.081]	A2B4=	0.953[	0.081]
A2B5=	0.964[	0.070]	A2B6=	0.949[	0.069]
A2B7=	0.930[	0.117]	A2B8=	0.935[	0.106]
A2B9=	0.956[	0.078]	A2B:=	0.946[	0.110]
A2B11=	0.940[	0.095]	A2B12=	0.965[	0.069]
A2B13=	0.947[	0.071]	A2B14=	0.955[	0.078]
A2B15=	0.960[	0.085]	A2B16=	0.937[	0.098]
A2B17=	0.932[	0.093]	A2B18=	0.971[	0.058]
A2B19=	0.937[	0.103]	A2B1:=	0.950[	0.082]
A2B21=	0.905[	0.105]	A2B22=	0.953[	0.081]

A2B23=	0.929[	0.094]	A2B24=	0.944[	0.088]
A2B25=	0.912[	0.107]	A2B26=	0.939[	0.090]
A2B27=	0.932[	0.105]	A2B28=	0.908[	0.137]
A2B29=	0.928[	0.101]	A2B2:=	0.937[	0.085]

Summary Table of ANOVA

Source	SS	df	MS	F	P
S	1.715	28	0.061		
A	0.009	1	0.009	0.741	0.4010
AS	0.338	28	0.012		
B	0.273	29	0.009	1.077	0.3580
BS	7.098	812	0.009		
AB	0.259	29	0.009	1.361	0.0985
ABS	5.336	812	0.007		

	Exp 1	**Exp 2**	**Exp 3**
Participants	40	11	14
Material	◆ 10 same-character lists ◆ 10 different-character lists **Each list contains:** ◆ 10 words ◆ 10 pseudo-word **Practice Item: 6**	◆ 15 same-character lists ◆ 15 different-character lists **Each list contains:** ◆ 15 words ◆ 15 phonologically identical pseudo-words **Practice Item: 20**	◆ 15 same-character lists ◆ 15 different-character lists **Each list contains:** ◆ 15 words ◆ 15 phonologically identical pseudo-words **Practice Item: 20**
Design	◆ Two Block ◆ ISI: 3000 ms ◆ Fixation point before each item ◆ Auditory warning signal before each item	◆ Random ◆ NO ISI ◆ NO fixation point ◆ Auditory warning signal before each list	◆ Random ◆ NO ISI ◆ Fixation point before each list ◆ Auditory warning signal before each list ◆ Preparation posture before each list
Instruction	Judge as quickly as possible	Try to be as accurate as possible	Judge as quickly as possible while trying to maintain your accuracy.
Result	See figures	See figures	See figures