

Department of English Language and Linguistics  
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**The Effects of Semantic Clustering in L2 Word Learning:  
Evidence from an Action Research Study**

Volume 2

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A Thesis  
Submitted for the degree of  
Doctor of Philosophy  
October 2006

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Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

**Please tick the words you know.**

account	bow	cove	forgery
accountant	box	crab	fortune
adventure	branch	crate	fur
aisle	brawl	creak	gait
animosity	breast	creek	garbage
ant	bribery	cucumber	gate
appeal	brook	custom	glacier
arc	bruise	cygnet	glass
argument	bucket	danger	gleam
ark	bud	dentist	glee
ascent	builder	deposit	gloom
ask	burglary	designer	glory
assent	cabbage	disdain	glotune
attic	calamity	doe	gorge
aunt	calendar	dogner	gulf
bag	calender	doubt	habit
bail	calgage	dough	hail
bale	can	drought	hake
balement	canter	eagle	hale
bane	cantor	ebb	ham
bargain	cape	egg	hatred
basement	carpenter	engineer	heir
basket	case	error	herring
bat	cedar	estuary	hoax
batt	cancel	evidence	hoof
bay	cent	ewe	hurricane
beach	certitude	excess	instrument
beak	chicken	explosion	interest
bee	chive	fair	invasion
beech	claw	famine	isle
beef	cliff	fare	itch
berth	coast	farmer	itchest
bias	cockle	fight	jab
bill	cod	fightess	jar
birth	colonel	fine	jeopardy
blister	comnel	fir	jest
boredom	controversy	flair	joke
borgeak	cough	flare	journey
bottle	council	flood	joy
bough	counsel	flow	jug

jury	pine	shrimp	trunk
kernel	place	sight	truth
kidnapping	pladine	signet	tub
lamb	plaice	site	tube
landing	plea	smuggling	turkey
lawyer	plumber	snail	turning
leaf	poison	sole	twig
leak	pollen	sorrow	twinkle
leek	porch	soul	valley
librarian	pork	source	veal
liding	pot	spat	venison
lie	poverty	spot	verdict
litter	prawn	squid	vet
loan	prejudice	squidail	volcano
lobster	priest	stake	waist
loyalty	prison	stalk	waste
lump	proof	statement	whine
mackerel	prosperity	steak	whisker
mane	punch	stream	willow
menace	quarrel	study	wine
mistake	query	summit	wing
mortgage	queryl	tail	witness
mug	quest	tailor	worm
mugging	raid	tarragon	yew
murder	rain	tea	yewlness
mussel	rash	tedium	
mutton	receipt	tee	
nest	rein	terrace	
oak	ridge	terrorism	
oaker	root	thorn	
oyster	sack	threat	
pain	sage	thyme	
pair	salary	thyrism	
pan	salmon	tin	
pane	sardine	toe	
pantry	scent	tool	
parrot	scientist	torment	
parsley	scorn	tornado	
paw	seal	torture	
peak	security	tow	
peal	sedeal	treason	
pear	seeder	trial	
peel	sensor	tributary	
peninsula	shame	trick	
peril	shark	trip	
pigeon	shore	trout	

University of Sheffield

**OFFICIAL PERMISSION TO UNDERTAKE RESEARCH AT PRIVATE SCHOOL OF LANGUAGES**

Evagelia Papathanasiou is conducting an action research study to identify the effects of two different ways of teaching and learning vocabulary in English as a second language. You have been asked to give her permission to conduct the research at your educational institution.

The study will last for 12 weeks and will involve teaching new English vocabulary items. Two different methods of vocabulary teaching and learning will be used. Two classes of intermediate students will take part in the research. The purpose of this study is to compare the results of the two different methods using vocabulary tests.

Evagelia Papathanasiou has explained this study to you and answered your questions. If you have any other questions or research-related problems, you may reach Evagelia Papathanasiou at 0044-7817411382 or email her at [e.papathanasiou@sheffield.ac.uk](mailto:e.papathanasiou@sheffield.ac.uk).

Giving permission to undertake research at your educational institution is entirely voluntary. You may refuse to offer permission or co-operation at any time without penalty.

I agree to give permission.

-----  
Signature

A. M.

24/02/2004  
-----  
Date

**VOCABULARY LEVEL TEST****Name / Surname:** \_\_\_\_\_**Age:** \_\_\_\_\_**Class / Level:** \_\_\_\_\_**Date:** \_\_\_\_\_

The following test is used to make an estimate of a learner's vocabulary size. The results of the test will not be announced to your teachers. They will be treated in confidentiality for educational purposes only.

**Instructions**

Write **T** if a sentence is true.

Write **N** if it is not true.

Write **X** if you do not understand the sentence.

**TEST ΛΕΞΙΛΟΓΙΟΥ****Όνομα / Επίθετο:** \_\_\_\_\_**Ηλικία:** \_\_\_\_\_**Τάξη / Επίπεδο:** \_\_\_\_\_**Ημερομηνία:** \_\_\_\_\_

Η σελίδα που ακολουθεί, είναι ένα test που χρησιμοποιείται για την διερεύνηση του επιπέδου γνώσης της Αγγλικής γλώσσας. Τα αποτελέσματα δεν θα χρησιμοποιηθούν ως βαθμολογία για το φροντιστήριο. Αυτά θα είναι απόρρητα και εμπιστευτικά και θα χρησιμοποιηθούν μόνο για εκπαιδευτικούς σκοπούς.

**Οδηγίες**

Γράψε **T** εάν η πρόταση είναι σωστή.

Γράψε **N** εάν η πρόταση είναι λάθος.

Γράψε **X** εάν δεν καταλαβαίνεις την πρόταση.

2. 1,000 word level tests

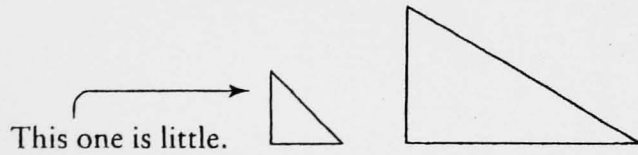
A description of the making of these two tests can be found in Nation (1993a).

VOCABULARY TEST: 1,000 WORD LEVEL TEST A

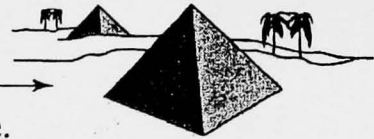
Write T if a sentence is true. Write N if it is not true. Write X if you do not understand the sentence. The first one has been answered for you.

We cut time into minutes, hours and days.

T



This one is little.

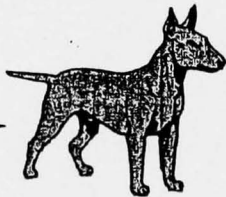


You can find these everywhere.

Some children call their mother Mama.

Show me the way to do it means 'show me how to do it'.

This country is part of the world.



This can keep people away from your house.

When something falls, it goes up.

Most children go to school at night.

It is easy for children to remain still.



One person can carry this.

A scene is a part of a play.

People often think of their home, when they are away from it.

There is a mountain in every city.

Each month has the same number of days.

A chief is the youngest person in a group.

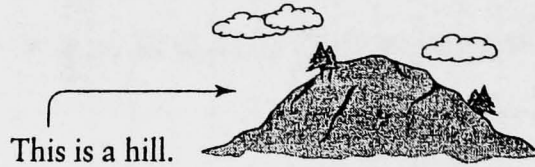
Black is a colour.

You can use a pen to make marks on paper.

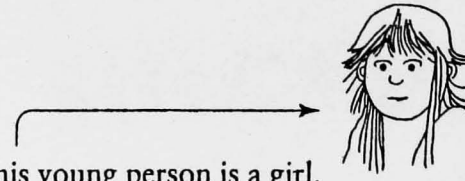
A family always has at least two people.

You can go by road from London to New York.

Silver costs a lot of money.



This is a hill.



This young person is a girl.

We can be sure that one day we will die.

A society is made of people living together.

An example can help you understand.

Some books have pictures in them.

When some people attack other people, they try to hurt them.

When something is ancient, it is very big.

Big ships can sail up a stream.

It is good to keep a promise.

People often dream when they are sleeping.

This is a date - 10 o'clock.

When something is impossible, it is easy to do it.

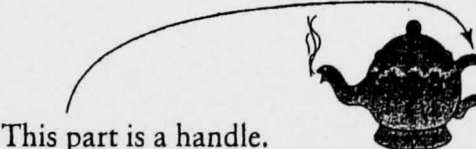
Milk is blue.

A square has five sides.

Boats are made to travel on land.

Cars cannot pass each other on a wide road.

When you look at something closely, you can see the details.



This part is a handle.



**Results from Word level True/False tests for intermediate children**

<b>Class A</b>	<b>Vocabulary level test scores</b>
1	22/39
2	19/39
3	29/39
4	28/39
5	35/39
6	24/39
7	25/39
8	28/39
9	30/39
10	28/39
11	31/39
12	33/39
13	27/39
14	30/39
15	34/39
16	33/39
<b>Class B</b>	
1	26/39
2	34/39
3	28/39
4	34/39
5	32/39
6	28/39
7	23/39
8	28/39
9	22/39
10	31/39
11	32/39
12	34/39
13	32/39
14	27/39
15	24/39

### Student's Language Background Questionnaire

I would be very grateful if you would answer the following questions. All the information given will be treated in confidentiality.

1) Name: \_\_\_\_\_

2) Age: \_\_\_\_\_ Male: \_\_\_\_\_ Female: \_\_\_\_\_ (please tick)

3) Class/Level: \_\_\_\_\_

4) Are both of your parents Greek? Yes: \_\_\_\_\_ No: \_\_\_\_\_ (please tick)

If not, where does your mother or father come from? \_\_\_\_\_

(please write the country of origin)

5) How many years have you studied English for? \_\_\_\_\_

6) Do you study English at the Greek (public) school? If yes, how many lessons do you have per week? \_\_\_\_\_

7) Do you study any foreign language other than English? If yes, please list.

\_\_\_\_\_

\_\_\_\_\_

8) How much time do you spend studying English every week?

\_\_\_\_\_

9) Which of the following do you like the most? (please tick only one)

Listening to English: \_\_\_\_\_

Writing in English: \_\_\_\_\_

Reading in English: \_\_\_\_\_

Speaking in English: \_\_\_\_\_

Which do you find the most difficult? \_\_\_\_\_

I would like to take this opportunity to thank you for filling in this questionnaire.

### Ερωτηματολόγιο διαπίστωσης υφιστάμενης υποδομής σε ξένες γλώσσες μαθητών στοιχειώδους εκπαίδευσης.

Θα παρακαλούσα πολύ να απαντηθούν όλες οι παρακάτω ερωτήσεις. Οι απαντήσεις θα χρησιμοποιηθούν εμπιστευτικά για εκπαιδευτικούς σκοπούς.

- 1) Όνομα/Επίθετο: \_\_\_\_\_
- 2) Ηλικία: \_\_\_\_\_ Αγόρι: \_\_\_ Κορίτσι: \_\_\_ (παρακαλώ σημείωσε)
- 3) Τάξη / Επίπεδο: \_\_\_\_\_
- 4) Είναι και οι δύο γονείς σου Έλληνες; Ναι: \_\_\_ Όχι: \_\_\_ (παρακαλώ σημείωσε)  
Εάν όχι, από πού είναι ο πατέρας ή η μητέρα σου; \_\_\_\_\_  
(παρακαλώ γράψε την χώρα καταγωγής)
- 5) Πόσα χρόνια μαθαίνεις Αγγλικά; \_\_\_\_\_
- 6) Μαθαίνεις Αγγλικά στο Ελληνικό (δημόσιο) σχολείο; Εάν ναι, πόσα μαθήματα  
κάνεις την εβδομάδα; \_\_\_\_\_
- 7) Μαθαίνεις άλλες ξένες γλώσσες εκτός από τα Αγγλικά; Εάν ναι, ποιες είναι αυτές;  
\_\_\_\_\_  
\_\_\_\_\_
- 8) Πόσες ώρες διαβάζεις Αγγλικά στο σπίτι την εβδομάδα; \_\_\_\_\_
- 9) Ποιο από τα παρακάτω σου αρέσει περισσότερο; (παρακαλώ διάλεξε μόνο ένα)  
Να ακούς Αγγλικά: \_\_\_\_\_  
Να γράφεις στα Αγγλικά: \_\_\_\_\_  
Να διαβάζεις στα Αγγλικά: \_\_\_\_\_  
Να μιλάς στα Αγγλικά: \_\_\_\_\_  
Ποιο από τα παραπάνω σου είναι πιο δύσκολο; \_\_\_\_\_

Σε ευχαριστώ που συμμετείχες στη συμπλήρωση αυτού του ερωτηματολογίου.

## Findings from Language Background Questionnaires for intermediate children

Class A	M/F	Age	Years of learning English	Other languages	Studying hours per week	Favourite skill	Most difficult skill
1	F	11	5		3 to 4	writing	speaking
2	F	12	5	German	3 to 4	speaking	listening
3	M	12	5	Frence	3 to 4	speaking	reading
4	F	13	5	Frence	3	listening	speaking
5	F	13	6		3	listening	speaking
6	M	14	6	German	3	listening	speaking
7	F	13	5		4	speaking	listening
8	F	16	5	German	4	speaking	
9	F	12	5	German	3 to 4	reading	speaking
10	F	12	5	German	3 to 4	reading	writing
11	F	13	5	Frence	3 to 4	speaking	writing
12	F	13	5	Frence	3	speaking	reading
13	F	14	5	German	3	writing	reading
14	M	15	6		3 to 4	speaking	writing
15	M	13	6		4	listening	writing
16	M	14	6	German	4	speaking	writing
<b>Class B</b>							
1	F	15	5	Frence	3 to 4	speaking	writing
2	F	14	5	German	3	reading	listening
3	F	14	5	German	3	speaking	writing
4	M	11	6		3 to 4	speaking	writing
5	M	11	5		3 to 4	listening	reading
6	M	13	6	German	3 to 4	reading	speaking
7	F	12	5		3	speaking	listening
8	F	15	6	Frence	3	speaking	writing
9	F	12	6	Frence	4	speaking	writing
10	M	13	5	German	4	reading	writing
11	M	13	5	German	3 to 4	speaking	speaking
12	M	15	5	German	3 to 4	listening	speaking
13	F	14	5		3	listening	writing
14	F	13	6	German	3 to 4	speaking	writing
15	F	12	5	German	3 to 4	speaking	writing



## Vocabulary Observation List (1<sup>st</sup>)

**Date: 25/02/2004**

**Class: Intermediate**

**Coursebook: Shine C**

**Unit: 5**

<b>1) Vocabulary presentation to the students.</b>	<b>YES</b>	<b>NOT SURE</b>	<b>NO</b>	<b>COMMENTS</b>
Vocabulary was dealt with explicitly.	√			L1-L2 translation
Vocabulary was dealt in isolation			√	Always through exercises
Vocabulary was presented:				
a) through explanation	√			
b) through demonstration	√			
c) through context	√			Small text found in the unit
d) through L1 translation	√			Used as a last option
e) through L2 paraphrase/synonym/antonym	√			When possible and time permitting
Vocabulary was introduced in related sets.	√			Topic related vocabulary
All instructions were clear.	√			
The teacher made sure all students understood the meaning of new vocabulary.	√			a) elicit an example b) made sure all students write new words in their notebooks
<b>2) Procedures used to practise new vocabulary:</b>				
a) writing activities	√			
b) speaking activities	√			
c) reading activities	√			
d) listening activities			√	
<b>3) Vocabulary presentation in the coursebook/unit.</b>				
Vocabulary was presented in related sets.	√			
Vocabulary is dealt in separate section in the unit.			√	In context
Vocabulary is integrated with:				
a) the reading section	√			
b) the speaking section	√			
c) the listening section	√			
d) the writing section	√			

**4) Any other comments-informal interview**

Highlight new words on the boards-Gives examples in English. If students do not understand then provides L1 translation (most common technique)-Elicit the answers from the students-Topic related and synonyms work very well with advanced students-Topic related vocabulary is helpful because it creates mental associations-No use of dictionaries-Not much time spent on vocabulary because of grammar.

## Vocabulary Observation List (2<sup>nd</sup>)

**Date: 27/02/2004****Class: Intermediate****Coursebook: Shine C****Unit: 5**

<b>1) Vocabulary presentation to the students.</b>	<b>YES</b>	<b>NOT SURE</b>	<b>NO</b>	<b>COMMENTS</b>
Vocabulary was dealt with explicitly.	√			The meaning of new words is deduced from the passage (use of L1)
Vocabulary was dealt in isolation			√	
Vocabulary was presented:				
a) through explanation	√			Definition in English if possible
b) through demonstration	√			And guessing
c) through context	√			Text or dialogue in the unit
d) through L1 translation	√			If necessary
e) through L2 paraphrase/synonym/antonym	√			Paraphrase/synonyms: yes Antonyms: not often
Vocabulary was introduced in related sets.	√			
All instructions were clear.	√			
The teacher made sure all students understood the meaning of new vocabulary.	√			By asking students to correct each other
<b>2) Procedures used to practise new vocabulary:</b>				
a) writing activities	√			As homework
b) speaking activities	√			For revision
c) reading activities			√	
d) listening activities	√			
<b>3) Vocabulary presentation in the coursebook/unit.</b>				
Vocabulary was presented in related	√			

sets.				
Vocabulary is dealt in separate section in the unit.			√	In context
Vocabulary is integrated with:				
a) the reading section	√			
b) the speaking section	√			
c) the listening section	√			
d) the writing section	√			
<b>4) Any other comments-informal interview</b>				
Working with topic related vocabulary is better (associations in the mind)-Not so much attention to vocabulary-More attention to grammar.				



## Post-test questionnaire for alternative approaches to presenting vocabulary to EFL intermediate students

I would be grateful if you could answer the following questions. All the information given will be treated in confidentiality for educational purposes only.

<b>Name:</b>	<b>Date:</b>	<b>Time:</b>
--------------	--------------	--------------

1. Did you notice any difference in the way of teaching vocabulary in lessons we had before Easter compared to lessons we had after Easter? (please tick)

Yes	I do not know	No

2. If your answer to the first question is **Yes** then:

(a) What do you think was the difference?

---



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(b) What way did you like the most and why?

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3. Did you find the use of word cards useful to learn the new vocabulary? (please tick)

Yes	A little	No

4. Which of the following exercises did you like the most? (please tick only one)

- (a) Matching new English words with Greek equivalents.
- (b) Using new English words in blank filling exercises.

Thank you for your time.

**Τελικό ερωτηματολόγιο διαπίστωσης γνώμης μαθητών για τον τρόπο παρουσίασης καινούριου λεξιλογίου.**

Θα παρακαλούσα πολύ να απαντηθούν όλες οι παρακάτω ερωτήσεις. Οι απαντήσεις θα χρησιμοποιηθούν εμπειρευτικά για εκπαιδευτικούς σκοπούς.

<b>Όνομα:</b>	<b>Ημερομηνία:</b>	<b>Όμα:</b>
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1. Παράτηρες κάποια διαφορά στον τρόπο διδασκαλίας των καινούριων λέξεων που σου δίδαξαν για τρεις εβδομάδες πριν το Πάσχα σε σχέση με αυτόν που σου δίδαξαν για τρεις εβδομάδες μετά το Πάσχα; (παρακαλώ σημείωσε)

<b>Ναι</b>	<b>Δεν ξέρω</b>	<b>Όχι</b>
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2. Εάν η απάντησή σου στην ερώτηση 1 είναι **Ναι** τότε:

(α) Ποια νομίζεις ήταν η διαφορά;

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(β) Ποιός τρόπος σου άρεσε περισσότερο και γιατί;

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3. Σε βοήθησε η χρήση κάποιο-λέξεων στο να μάθεις ευκολότερα τις καινούριες σου λέξεις; (παρακαλώ σημείωσε)

<b>Ναι</b>	<b>Λίγο</b>	<b>Όχι</b>
------------	-------------	------------

4. Ποια άσκηση σου άρεσε περισσότερο από αυτές που κάναμε μέσα στην τάξη; (παρακαλώ σημείωσε μόνο ένα)

(α) Να ενώνεις την αγγλική λέξη με τη σωστή ελληνική.

(β) Να βάζεις τη σωστή αγγλική λέξη στο κενό μέσα σε μία πρόταση.

Σε ευχαριστώ που συμμετείχες στη συμπλήρωση αυτού του ερωτηματολογίου.

## Findings from Post-test questionnaires for intermediate children

Class A	Did you notice any difference?	What was the difference?	What way did you like the most?	Did word cards help you?	What exercise did you like the most?
1	yes	related vs unrelated	related	yes	matching exercise
2	yes	related vs unrelated	related	yes	matching exercise
3	yes	related vs unrelated	related	yes	matching exercise
4	yes	related vs unrelated	related	yes	matching exercise
5	yes	related vs unrelated	related	yes	matching exercise
6	yes	related vs unrelated	related	yes	matching exercise
7	yes	related vs unrelated	unrelated	yes	matching exercise
8	yes	related vs unrelated	unrelated	yes	matching exercise
9	no		related	a little	matching exercise
10	yes	related vs unrelated	related	yes	gap filling
11	no	related vs unrelated	related	yes	matching exercise
12	yes	related vs unrelated	related	yes	gap filling
13	yes	related vs unrelated	related	yes	matching exercise
14	yes	related vs unrelated	related	yes	matching exercise
15	yes	related vs unrelated	unrelated	yes	matching exercise
16	yes	related vs unrelated	unrelated	yes	matching exercise
<b>Class B</b>					
1	yes	related vs unrelated	related	yes	matching exercise
2	yes	related vs unrelated	related	yes	gap filling
3	yes	related vs unrelated	related	yes	matching exercise
4	yes	related vs unrelated	related	yes	gap filling
5	yes	related vs unrelated	related	yes	gap filling
6	no		related	yes	matching exercise
7	yes	related vs unrelated	unrelated	yes	matching exercise
8	yes	related vs unrelated	related	a little	matching exercise
9	yes	related vs unrelated	related	a little	gap filling
10	yes	related vs unrelated	related	yes	gap filling
11	yes	related vs unrelated	unrelated	yes	matching exercise
12	yes	related vs unrelated	unrelated	a little	matching exercise
13	yes	related vs unrelated	related	yes	matching exercise
14	yes	related vs unrelated	related	yes	matching exercise
15	yes	related vs unrelated	related	yes	matching exercise

University of Sheffield

**OFFICIAL PERMISSION TO UNDERTAKE RESEARCH WITH PUBLIC  
SERVANTS – DEPARTMENT OF EDUCATION.**

Evagelia Papathanasiou is conducting an action research study to identify the effects of two different ways of teaching and learning vocabulary in English as a second language. You have been asked to give her permission to conduct the research at your educational department.

The study will last for 10 weeks and will involve teaching new English vocabulary items. Two different methods of vocabulary teaching and learning will be used. Two classes of adult beginners (public servants) will take part in the research. The purpose of this study is to compare the results of the two different methods using vocabulary tests.

Evagelia Papathanasiou has explained this study to you and answered your questions. If you have any other questions or research-related problems, you may reach Evagelia Papathanasiou at 0044-7817411382 or email her at [e.papathanasiou@sheffield.ac.uk](mailto:e.papathanasiou@sheffield.ac.uk).

Giving permission to undertake research at your educational department is entirely voluntary. You may refuse to offer permission or co-operation at any time without penalty.

I agree to give permission.

-----  
Signature

Y. B.

22/10/2004

-----  
Date

**VOCABULARY LEVEL TEST****Name / Surname:** \_\_\_\_\_**Age:** \_\_\_\_\_**Class / Level:** \_\_\_\_\_**Date:** \_\_\_\_\_

The following test is used to make an estimate of a learner's vocabulary size. The results of the test will not be announced to your teachers. They will be treated in confidentiality for educational purposes only.

**Instructions**

Write **T** if a sentence is true.

Write **N** if it is not true.

Write **X** if you do not understand the sentence.

**TEST ΛΕΞΙΛΟΓΙΟΥ****Όνομα / Επίθετο:** \_\_\_\_\_**Ηλικία:** \_\_\_\_\_**Τάξη / Επίπεδο:** \_\_\_\_\_**Ημερομηνία:** \_\_\_\_\_

Η σελίδα που ακολουθεί, είναι ένα test που χρησιμοποιείται για την διερεύνηση του επιπέδου γνώσης της Αγγλικής γλώσσας. Τα αποτελέσματα θα είναι απόρρητα και εμπιστευτικά και θα χρησιμοποιηθούν μόνο για εκπαιδευτικούς σκοπούς.

**Οδηγίες**

Γράψε **T** εάν η πρόταση είναι σωστή.

Γράψε **N** εάν η πρόταση είναι λάθος.

Γράψε **X** εάν δεν καταλαβαίνεις την πρόταση.

2. 1,000 word level tests

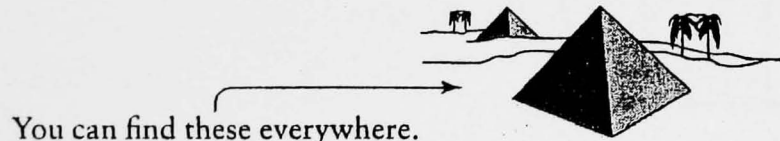
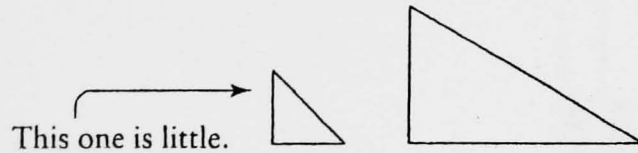
A description of the making of these two tests can be found in Nation (1993a).

VOCABULARY TEST: 1,000 WORD LEVEL TEST A

Write T if a sentence is true. Write N if it is not true. Write X if you do not understand the sentence. The first one has been answered for you.

We cut time into minutes, hours and days.

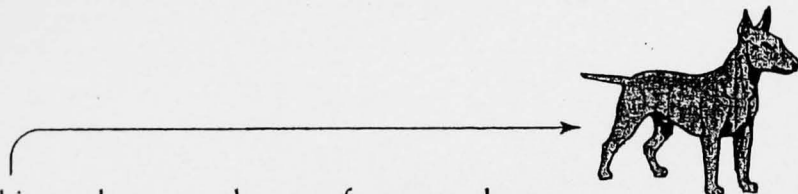
T



Some children call their mother Mama.

Show me the way to do it means 'show me how to do it'.

This country is part of the world.



When something falls, it goes up.

Most children go to school at night.

It is easy for children to remain still.



A scene is a part of a play.

People often think of their home, when they are away from it.

There is a mountain in every city.

Each month has the same number of days.

A chief is the youngest person in a group.

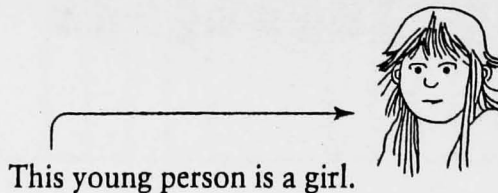
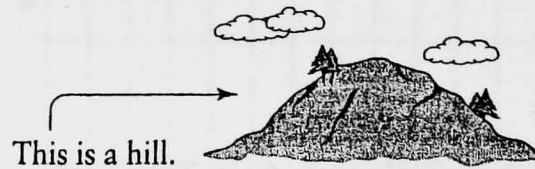
Black is a colour.

You can use a pen to make marks on paper.

A family always has at least two people.

You can go by road from London to New York.

Silver costs a lot of money.



We can be sure that one day we will die.

A society is made of people living together.

An example can help you understand.

Some books have pictures in them.

When some people attack other people, they try to hurt them.

When something is ancient, it is very big.

Big ships can sail up a stream.

It is good to keep a promise.

People often dream when they are sleeping.

This is a date - 10 o'clock.

When something is impossible, it is easy to do it.

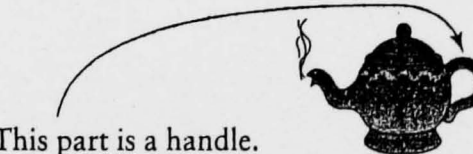
Milk is blue.

A square has five sides.

Boats are made to travel on land.

Cars cannot pass each other on a wide road.

When you look at something closely, you can see the details.



**Results from Word level True/False tests for adult beginners**

<b>Class A</b>	<b>Vocabulary level test scores</b>
1	10/39
2	12/39
3	15/39
4	18/39
5	7/39
6	9/39
7	11/39
8	13/39
9	10/39
10	9/39
11	12/39
12	6/39
13	9/39
14	14/39
15	7/39
16	13/39
17	8/39
<b>Class B</b>	
1	12/39
2	5/39
3	7/39
4	8/39
5	14/39
6	13/39
7	13/39
8	10/39
9	8/39
10	9/39
11	6/39
12	7/39
13	11/39
14	5/39
15	10/39



### Participant's Language Background Questionnaire.

I would be very grateful if you could answer the following questions. All the information given will be treated in confidentiality for educational purposes only.

1) Name/Surname: \_\_\_\_\_

2) Age: \_\_\_\_\_ Male: \_\_\_ Female: \_\_\_ (please tick)

3) Class / Level: \_\_\_\_\_

4) Do you study English for personal reasons or professional needs?

\_\_\_\_\_

5) Do you study any foreign language other than English? If yes, please list.

\_\_\_\_\_

\_\_\_\_\_

6) Are there any other members in your family studying English? If yes, who are they?

\_\_\_\_\_

7) Which of the following do you like the most? (please tick only one)

Listening to English: \_\_\_\_\_

Writing in English: \_\_\_\_\_

Reading in English: \_\_\_\_\_

Speaking in English: \_\_\_\_\_

Which do you find the most difficult? \_\_\_\_\_

I would like to take this opportunity to thank you for filling in this questionnaire.

**Ερωτηματολόγιο διαπίστωσης υφιστάμενης υποδομής  
σε ξένες γλώσσες δημοσίων υπαλλήλων.**

Θα παρακαλούσα πολύ να απαντηθούν όλες οι παρακάτω ερωτήσεις. Οι απαντήσεις θα χρησιμοποιηθούν εμπιστευτικά για εκπαιδευτικούς σκοπούς.

1) Όνομα/Επίθετο: \_\_\_\_\_

2) Ηλικία: \_\_\_\_\_ Άρρεν: \_\_\_\_ Θήλυ: \_\_\_\_ (παρακαλώ σημειώστε)

3) Τάξη / Επίπεδο: \_\_\_\_\_

4) Μαθαίνετε Αγγλικά για προσωπικούς λόγους ή για επαγγελματικές ανάγκες;

\_\_\_\_\_

5) Μαθαίνετε άλλες ξένες γλώσσες εκτός από τα Αγγλικά; Εάν ναι, ποιες είναι αυτές;

\_\_\_\_\_

\_\_\_\_\_

6) Υπάρχουν άλλα άτομα στην οικογένειά σας που μαθαίνουν Αγγλικά; Εάν ναι, ποια είναι αυτά; \_\_\_\_\_

7) Ποιο από τα παρακάτω σας αρέσει περισσότερο; (παρακαλώ διαλέξτε μόνο ένα)

Να ακούτε Αγγλικά: \_\_\_\_\_

Να γράφετε στα Αγγλικά: \_\_\_\_\_

Να διαβάζετε στα Αγγλικά: \_\_\_\_\_

Να μιλάτε στα Αγγλικά: \_\_\_\_\_

Ποιο από τα παραπάνω σας είναι πιο δύσκολο; \_\_\_\_\_

Σε ευχαριστώ που συμμετείχατε στη συμπλήρωση αυτού του ερωτηματολογίου.

## Findings from Language background questionnaires for adult beginners

Class A		Age	Personal or professional needs	Other languages	Other people in the family learning English	Favourite skill	Most difficult skill
1	F	30	Personal			listening	speaking
2	M	40	Both		children	listening	speaking
3	F	38	Both		daughter	listening	speaking
4	F	47	Both		children	reading	speaking
5	F	35	Personal	German	son	reading	listening
6	F	45	Personal		children	reading	listening
7	F	39	Both			listening	writing
8	M	41	Both		children	listening	speaking
9	M	39	Both		son	listening	speaking
10	M	50	Both			writing	speaking
11	F	42	Both		children	writing	speaking
12	F	46	Both		children	reading	speaking
13	F	47	Both			listening	reading
14	F	40	Both		children	listening	writing
15	F	35	Personal	German		listening	speaking
16	M	48	Both		son	listening	speaking
17	M	34	Both			listening	writing
<b>Class B</b>							
1	F	36	Both			reading	listening
2	F	40	Both		children	writing	speaking
3	F	43	Personal		children	writing	speaking
4	F	45	Both		children	listening	writing
5	F	32	Both	Frence		reading	listening
6	M	38	Both		daughter	listening	speaking
7	M	40	Personal		children	listening	listening
8	F	31	Both			listening	speaking
9	F	42	Both		children	listening	speaking
10	F	37	Both		children	reading	listening and speaking
11	F	45	Both		children	writing	speaking
12	F	40	Both			listening	writing
13	M	30	Both			listening	listening
14	F	35	Both		children	reading	speaking
15	M	45	Both		children	writing	reading

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

**Please tick the words you know.**

account	bow	cove	forgery
accountant	box	crab	fortune
adventure	branch	crate	fur
aisle	brawl	creak	gait
animosity	breast	creek	garbage
ant	bribery	cucumber	gate
appeal	brook	custom	glacier
arc	bruise	cygnet	glass
argument	bucket	danger	gleam
ark	bud	dentist	glee
ascent	builder	deposit	gloom
ask	burglary	designer	glory
assent	cabbage	disdain	glotune
attic	calamity	doe	gorge
aunt	calendar	dogner	gulf
bag	calender	doubt	habit
bail	calgage	dough	hail
bale	can	drought	hake
balement	canter	eagle	hale
bane	cantor	ebb	ham
bargain	cape	egg	hatred
basement	carpenter	engineer	heir
basket	case	error	herring
bat	cedar	estuary	hoax
batt	cancel	evidence	hoof
bay	cent	ewe	hurricane
beach	certitude	excess	instrument
beak	chicken	explosion	interest
bee	chive	fair	invasion
beech	claw	famine	isle
beef	cliff	fare	itch
berth	coast	farmer	itchest
bias	cockle	fight	jab
bill	cod	fightess	jar
birth	colonel	fine	jeopardy
blister	comnel	fir	jest
boredom	controversy	flair	joke
borgeak	cough	flare	journey
bottle	council	flood	joy
bough	counsel	flow	jug

jury	pine	shrimp	trunk
kernel	place	sight	truth
kidnapping	pladine	signet	tub
lamb	plaice	site	tube
landing	plea	smuggling	turkey
lawyer	plumber	snail	turning
leaf	poison	sole	twig
leak	pollen	sorrow	twinkle
leek	porch	soul	valley
librarian	pork	source	veal
liding	pot	spat	venison
lie	poverty	spot	verdict
litter	prawn	squid	vet
loan	prejudice	squidail	volcano
lobster	priest	stake	waist
loyalty	prison	stalk	waste
lump	proof	statement	whine
mackerel	prosperity	steak	whisker
mane	punch	stream	willow
menace	quarrel	study	wine
mistake	query	summit	wing
mortgage	queryl	tail	witness
mug	quest	tailor	worm
mugging	raid	tarragon	yew
murder	rain	tea	yewlness
mussel	rash	tedium	
mutton	receipt	tee	
nest	rein	terrace	
oak	ridge	terrorism	
oaker	root	thorn	
oyster	sack	threat	
pain	sage	thyme	
pair	salary	thyrism	
pan	salmon	tin	
pane	sardine	toe	
pantry	scent	tool	
parrot	scientist	torment	
parsley	scorn	tornado	
paw	seal	torture	
peak	security	tow	
peal	sedal	treason	
pear	seeder	trial	
peel	sensor	tributary	
peninsula	shame	trick	
peril	shark	trip	
pigeon	shore	trout	

Όνομα: \_\_\_\_\_

Τάξη/Επίπεδο: \_\_\_\_\_

Ημερομηνία: \_\_\_\_\_

**Παρακαλώ σημειώστε τις λέξεις που δεν γνωρίζετε.**

αγαλλίαση	καλαμάρι	πλαστογραφία
αισθητήρας	κανάτα	πλήξη
ακρωτήριο	καραβίδα	πόνος
άμπωτη	κατήφεια	πράσο
αμφιβολία	καυγαδάκι	προδοσία
αναζήτηση	κεφαλόσκαλο	προκατάληψη
αναλαμπή	κίνδυνος	πύλη
ανεμοστρόβιλος	κοιλάδα	ράφτης
άνοδος	κορυφή	ρέγγα
απάτη	κορυφογραμμή	ρέμα
απειλή	λαθρεμπόριο	ρυμούλκηση
απόδειξη	λάμψη	συγκατάθεση
αρνί	ληστεία	συμβουλή
αστακός	λιμός	συμβούλιο
βασανιστήριο	λογαριασμός	συνταγματάρχης
βεβαιότητα	μαραγκός	σφραγιδόλιθος
γαρίδα	μάρτυρας	σωληνάρι
γούνα	μαρτυρία	τζάμι
γροθιά	μαρτύριο	τρομοκρατία
γύρη	μελανιά	υδραυλικός
δάνειο	μέση	υποθήκη
δάχτυλο	μίσος	υψωματάκι
διαμάχη	μονοτονία	φαράγγι
δίκη	μοσχάρι	φαρμάκι
δωροδοκία	μουστάκι	φασκομηλιά
έθιμο	μπακαλιάρος	φιλονικία
εισβολή	μπουμπούκι	φλούδα
εκβολή	μπριζόλα	φουσκάλα
ένορκοι	μύδι	φτώχεια
ένσταση	μυρωδιά	φωτοβολίδα
εξάνθημα	όρμος	χαίτη
επιρεασμός	παγίδα	χαλάζι
επιδρομή	παλίρροια	χαλινάρι
εργαλείο	παλούκι	χείμαρρος
ερώτημα	παραπόταμος	χερσόνησος
ετυμηγορία	περίσσεια	χοιρομέρι
ευημερία	περιστέρι	χτύπημα
εχθρότητα	περιφρόνηση	χωρατό
ζυμάρι	πέστροφα	ψίχα
ιτιά	πίστη	ψυχή

*Class A***Exercise One:**

Match the English words on the left with the Greek equivalents on the right.

smuggling  
terrorism  
forgery  
mugging  
trial  
proof  
jury  
verdict  
witness  
bribery

δωροδοκία
ένορκοι
τρομοκρατία
λαθρεμπόριο
ετυμηγορία
ληστεία
πλαστογραφία
απόδειξη
δίκη
μάρτυρας

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) Mary was a victim of \_\_\_\_\_ last week.
- b) The \_\_\_\_\_ is the decision that is given by the \_\_\_\_\_ at the end of a \_\_\_\_\_.
- c) \_\_\_\_\_ is the act of offering money to someone in order to persuade them to do something for you.
- d) \_\_\_\_\_ is the use of violence, kidnapping and bombing.
- e) John was arrested and charged with drug \_\_\_\_\_.
- f) You must have \_\_\_\_\_ of residence if you want to get into the building.
- g) A \_\_\_\_\_ to an accident or crime is the person who saw it.
- h) The document was a \_\_\_\_\_!

*Class A***Exercise One:**

Match the English words on the left with the Greek equivalents on the right.

pane  
pain  
steak  
stake  
toe  
tow  
colonel  
kernel  
council  
counsel

δάχτυλο (ποδιού)
ψίχα (π.χ. καρδιού)
συμβούλιο
ρυμούλκηση
συνταγματάρχης
συμβουλή
μπριζόλα
πόνος
τζάμι
παλούκι

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) A \_\_\_\_\_ is a large flat piece of beef.
- b) A \_\_\_\_\_ is a flat sheet of glass in a window or door.
- c) You can find a \_\_\_\_\_ at the end of each foot.
- d) The city \_\_\_\_\_ meets every other Tuesday.
- e) The \_\_\_\_\_ will review the troops.
- f) I will ask for \_\_\_\_\_ from the advisor.
- g) I left one \_\_\_\_\_ of corn on my plate.
- h) I have a back \_\_\_\_\_ today!
- i) A \_\_\_\_\_ is a pointed wooden post which is pushed into the ground.
- j) I can give you a \_\_\_\_\_ if you want!



*Class A***Exercise One:**

Match the English words on the left with the Greek equivalents on the right.

cape  
peninsula  
cove  
tributary  
valley  
gorge  
stream  
estuary  
ridge  
summit

όρμος
κοιλιάδα
χείμαρρος
παραπόταμος
κορυφή
εκβολή
χερσόνησος
φαράγγι
κορυφογραμμή
ακρωτήριο

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) The \_\_\_\_\_ of a mountain is the top of it.
- b) An \_\_\_\_\_ is the wide part of a river where it joins the sea.
- c) A \_\_\_\_\_ is a piece of land between hills, especially one that has a river flowing through it.
- d) A \_\_\_\_\_ is a large piece of land that sticks out into the sea from the coast.
- e) A \_\_\_\_\_ is a small bay on the coast.
- f) A \_\_\_\_\_ is a long narrow piece of land that is joined at one part to the mainland and is almost completely surrounded by water.
- g) A \_\_\_\_\_ is a river that flows into a larger one.
- h) A \_\_\_\_\_ is a deep narrow valley with very steep sides, usually where a river passes through mountains or an area of hard rock.
- i) A \_\_\_\_\_ is a small narrow river.
- j) A \_\_\_\_\_ is a long, narrow piece of raised land.

***Class A*****Exercise One:**

Match the English words on the left with the Greek equivalents on the right.

torment  
torture  
jab  
punch  
spat  
quarrel  
gleam  
twinkle  
boredom  
tedium

πλήξη
καυγαδάκι
βασανιστήριο
χτύπημα
μονοτονία
αναλαμπή
φιλονικία
μαρτύριο
λάμψη
γροθιά

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) She went mad with the \_\_\_\_\_ of her job.
- b) A \_\_\_\_\_ is an angry argument between friends or family members.
- c) A \_\_\_\_\_ of light is a pale, clear light.
- d) \_\_\_\_\_ is the state of being bored.
- e) A kindly \_\_\_\_\_ came into her eyes.
- f) A \_\_\_\_\_ between people is a disagreement between them.
- g) Many people died under \_\_\_\_\_.
- h) He spent days in \_\_\_\_\_ while the police searched for his stolen car.
- i) I saw Pete rocking John with a left \_\_\_\_\_.
- j) A \_\_\_\_\_ is a blow with the fist.

*Class A***Exercise One:**

Match the English words on the left with the Greek equivalents on the right.

lamb  
herring  
veal  
ham  
cod  
trout  
prawn  
shrimp  
squid  
lobster

ρέγγα
μπακαλιάρος
γαρίδα
αστακός
καλαμάρι
πέστροφα
μοσχάρι
χοιρομέρι
αρνί
καραβίδα

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- A \_\_\_\_\_ is a long silver-coloured fish.
- \_\_\_\_\_ is meat from the top of the back leg of a pig.
- A \_\_\_\_\_ is a sea creature with a long soft body and many tentacles.
- A \_\_\_\_\_ is a small shellfish, similar to a shrimp.
- A \_\_\_\_\_ has a hard shell, two large claws, and eight legs.
- A \_\_\_\_\_ is a small shellfish with long tails and many legs.
- \_\_\_\_\_ is a type of large edible fish.
- A \_\_\_\_\_ is a fairly large fish that lives in rivers and streams.
- \_\_\_\_\_ is meat from a calf.
- A \_\_\_\_\_ is a young sheep.

*Class A***Exercise One:**

Match the English words on the left with the Greek equivalents on the right.

ebb  
flow  
gloom  
glee  
certitude  
doubt  
loyalty  
treason  
poverty  
prosperity

πίστη
προδοσία
άμπωτη
αμφιβολία
παλίρροια
κατήφεια
φτώχεια
ευημερία
αγαλλίαση
βεβαιότητα

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) \_\_\_\_\_ is a feeling of happiness.
- b) \_\_\_\_\_ is the quality of staying firm in your friendship.
- c) The \_\_\_\_\_ is one of the regular periods when the sea gradually falls to a lower level.
- d) \_\_\_\_\_ is the crime of betraying your country.
- e) The \_\_\_\_\_ is the regular change in the level of the sea on the shore.
- f) \_\_\_\_\_ is the state of being definite about something.
- g) \_\_\_\_\_ is a feeling of unhappiness or despair.
- h) If you have a \_\_\_\_\_ about something you feel uncertain about it.
- i) \_\_\_\_\_ is a condition in which a person is doing well financially.
- j) \_\_\_\_\_ is the state of being extremely poor.

***Class B*****Exercise One:**

Match the English words on the left with their Greek equivalents on the right.

invasion  
mortgage  
menace  
controversy  
custom  
soul  
mussel  
tailor  
excess  
evidence

μαρτυρία
απειλή
ψυχή
εισβολή
περίσσεια
μύδι
υποθήκη
διαμάχη
έθιμο
ράφτης

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) A \_\_\_\_\_ is a kind of shellfish that you can eat from its shell.
- b) A \_\_\_\_\_ is the amount of money which you get from the bank in order to buy a house.
- c) If there is an \_\_\_\_\_ of a country, a foreign army enters it by force.
- d) \_\_\_\_\_ is an argument about something.
- e) \_\_\_\_\_ is the feeling of danger.
- f) An \_\_\_\_\_ of something is a larger amount than is needed.
- g) The \_\_\_\_\_ of lighting the Olympic Flame goes back centuries.
- h) \_\_\_\_\_ is the information which is used in a court of law.
- i) A \_\_\_\_\_ is a person whose job is to make men's clothes.
- j) She prayed for the \_\_\_\_\_ of her dead husband.

***Class B*****Exercise One:**

Match the English words on the left with their Greek equivalents on the right.

tube  
tornado  
sage  
carpenter  
pigeon  
bruise  
waist  
sensor  
dough  
willow

ζυμάρι
ιτιά
μέση
αισθητήρας
μελανιά
ανεμοστρόβιλος
σωληνάρι
μαραγκός
φασκομηλιά
περιστέρι

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) A \_\_\_\_\_ is a type of tree with long branches and long narrow leaves that grows near water.
- b) A \_\_\_\_\_ is an injury which appears as a purple mark on your body, although the skin is not broken.
- c) A \_\_\_\_\_ of something, such as paste, is a long thin container which you squeeze in order to force the paste out.
- d) A \_\_\_\_\_ is a violent wind storm whose center is a cloud in the shape of a funnel.
- e) A \_\_\_\_\_ is an instrument which reacts to heat or light, and is used to provide information.
- f) \_\_\_\_\_ is a mixture of flour, water and sometimes also fat and sugar.
- g) A \_\_\_\_\_ is a herb used in cooking.
- h) A \_\_\_\_\_ is a person whose job is making and repairing wooden things.
- i) A \_\_\_\_\_ is a bird, grey in colour, which often lives in towns.
- j) Your \_\_\_\_\_ is the middle part of your body.

***Class B*****Exercise One:**

Match the English words on the left with their Greek equivalents on the right.

bud

plumber

jug

whisker

porch

leek

peel

creek

hail

tee

κανάτα

πράσο

φλούδα

υδραυλικός

μπουμπούκι

πύλη

μουστάκι

ρέμα

υψωματάκι

χαλάζι

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) My brother is a \_\_\_\_\_.
- b) Every cat has at least one \_\_\_\_\_.
- c) Every \_\_\_\_\_ develops into a leaf or flower.
- d) A \_\_\_\_\_ is a sheltered area at the entrance to a building.
- e) The \_\_\_\_\_ of a fruit is its skin.
- f) \_\_\_\_\_ consists of small balls of ice that fall like rain from the sky.
- g) A \_\_\_\_\_ is a long thin vegetable which smell similar to onions.
- h) A \_\_\_\_\_ is a container with a handle and a lip.
- i) In golf, a \_\_\_\_\_ is one of the small flat areas of ground from which people hit the ball.
- j) A \_\_\_\_\_ is a small stream or river.

***Class B*****Exercise One:**

Match the English words on the left with their Greek equivalents on the right.

rein  
loan  
flare  
bane  
fur  
plea  
blister  
signet  
landing  
ascent

φωτοβολίδα
φαρμάκι
γούνα
ένσταση
κεφαλόσκαλο
χαλινάρι
άνοδος
σφραγιδόλιθος
δάνειο
φουσκάλα

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) A \_\_\_\_\_ is a small device that produces a bright flame.
- b) We can see a \_\_\_\_\_ attached to a horse's bridle.
- c) She had a black coat with a \_\_\_\_\_ collar.
- d) A \_\_\_\_\_ is a sum of money that you can borrow.
- e) The \_\_\_\_\_ of a particular person causes unhappiness and distress.
- f) His \_\_\_\_\_ of insanity is only partly justified.
- g) A \_\_\_\_\_ has a flat section at the front with letters of carved into it.
- h) A \_\_\_\_\_ is usually caused by something repeatedly rubbing your skin.
- i) An \_\_\_\_\_ is an upward movement.
- j) The \_\_\_\_\_ is the area at the top of the staircase which has rooms leading off it.



*Class B***Exercise One:**

Match the English words on the left with their Greek equivalents on the right.

peril  
query  
hoax  
raid  
bias  
hatred  
mane  
pollen  
famine  
assent

επιδρομή
επηρεασμός
γύρη
χαίτη
συγκατάθεση
λιμός
απάτη
μίσος
ερώτημα
κίνδυνος

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) There was attack on the BBC for alleged political \_\_\_\_\_.
- b) Racial \_\_\_\_\_ is sometimes present.
- c) In spite of great \_\_\_\_\_, I have survived.
- d) This lion has a long \_\_\_\_\_.
- e) \_\_\_\_\_ is a shortage of food.
- f) \_\_\_\_\_ is a fine powder by flowers.
- g) If you have a \_\_\_\_\_ please telephone our office.
- h) They recognised the plan as a \_\_\_\_\_!
- i) I give my \_\_\_\_\_ to my daughter to get her driving license.
- j) The rebels attempted a surprise \_\_\_\_\_ on a military camp.

**Class B****Exercise One:**

Match the English words on the left with their Greek equivalents on the right.

rash  
tool  
jest  
quest  
jeopardy  
scent  
account  
disdain  
prejudice  
animosity

χωρατό
αναζήτηση
μυρωδιά
εξάνθημα
εργαλείο
παγίδα
προκατάληψη
λογαριασμός
εχθρότητα
περιφρόνηση

**Exercise Two:**

Fill each gap with the most appropriate word from exercise one. Use each word only once.

- a) A \_\_\_\_\_ is any instrument that you use to do a particular kind of work.
- b) A \_\_\_\_\_ is a long and difficult search for something.
- c) A \_\_\_\_\_ is an area of red spots that appear on your skin when you are ill or have an allergy.
- d) A \_\_\_\_\_ is something that you say that is intended to be amusing.
- e) Some banks make it difficult to open an \_\_\_\_\_.
- f) Something's \_\_\_\_\_ is the pleasant smell that it has.
- g) Janet looked at him with \_\_\_\_\_.
- h) \_\_\_\_\_ is a strong feeling of dislike and anger.
- i) \_\_\_\_\_ is an unreasonable dislike of one group of people or thing over another.
- j) If a person is in \_\_\_\_\_ he or she is in a dangerous situation.

**Appendix 14** SHT tests on related vocabulary for intermediate children for both 271 class A and class B

**Vocabulary Test**

<b>Name:</b> _____	<b>M / F</b> _____	<b>Date:</b> _____
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**TASK:** Write the Greek equivalent for each of the following words.

1) peninsula _____	21) lamb _____	41) council _____
2) veal _____	22) tow _____	42) tedium _____
3) pain _____	23) twinkle _____	43) proof _____
4) punch _____	24) certitude _____	44) stream _____
5) flow _____	25) forgery _____	45) lobster _____
6) prosperity _____	26) cape _____	46) torture _____
7) smuggling _____	27) cod _____	47) gleam _____
8) witness _____	28) kernel _____	48) jury _____
9) summit _____	29) spat _____	49) ridge _____
10) doubt _____	30) glee _____	50) steak _____
11) boredom _____	31) mugging _____	51) counsel _____
12) squid _____	32) briber _____	52) quarrel _____
13) gloom _____	33) estuary _____	53) verdict _____
14) pane _____	34) shrimp _____	54) herring _____
15) loyalty _____	35) toe _____	55) <del>stake</del> _____
16) jab _____	36) torment _____	56) tributary _____
17) treason _____	37) ebb _____	57) colonel _____
18) terrorism _____	38) trial _____	58) trout _____
19) poverty _____	39) gorge _____	59) valley _____
20) cove _____	40) prawn _____	60) ham _____

**Appendix 14** SHT tests on related vocabulary for intermediate children for both 272  
class A and class B

**Results of SHT tests on related vocabulary for intermediate children for both  
class A and class B**

<b>Class A</b>	<b>Related SHT</b>	<b>Class B</b>	<b>Related SHT</b>
1	9,00	1	20,00
2	20,00	2	39,00
3	10,00	3	36,00
4	11,00	4	16,00
5	54,00	5	23,00
6	13,00	6	13,00
7	31,00	7	10,00
8	15,00	8	16,00
9	16,00	9	13,00
10	17,00	10	5,00
11	25,00	11	25,00
12	12,00	12	21,00
13	11,00	13	18,00
14	15,00	14	19,00
15	15,00	15	18,00
16	17,00		

Vocabulary Test

Name: _____	M / F _____	Date: _____
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**TASK:** Write the Greek equivalent for each of the following words.

1) cod _____	21) flow _____	41) gleam _____
2) certitude _____	22) summit _____	42) counsel _____
3) witness _____	23) squid _____	43) stake _____
4) gloom _____	24) loyalty _____	44) trout _____
5) torment _____	25) torture _____	45) trial _____
6) quarrel _____	26) cape _____	46) boredom _____
7) lobster _____	27) ebb _____	47) twinkle _____
8) tedium _____	28) verdict _____	48) peninsula _____
9) herring _____	29) steak _____	49) prosperity _____
10) veal _____	30) smuggling _____	50) jab _____
11) poverty _____	31) council _____	51) kernel _____
12) gorge _____	32) tow _____	52) proof _____
13) tributary _____	33) colonel _____	53) jury _____
14) ham _____	34) terrorism _____	54) mugging _____
15) doubt _____	35) estuary _____	55) spat _____
16) treason _____	36) pain _____	56) pane _____
17) lamb _____	37) forgery _____	57) cove _____
18) ridge _____	38) stream _____	58) toe _____
19) punch _____	39) valley _____	59) prawn _____
20) bribery _____	40) glee _____	60) shrimp _____

**Results of LT tests on related vocabulary for intermediate children for both class A and class B**

<b>Class A</b>	<b>Related LT</b>	<b>Class B</b>	<b>Related LT</b>
1	0,00	1	17,00
2	9,00	2	30,00
3	13,00	3	29,00
4	9,00	4	10,00
5	36,00	5	12,00
6	13,00	6	6,00
7	14,00	7	8,00
8	16,00	8	9,00
9	13,00	9	12,00
10	18,00	10	7,00
11	19,00	11	16,00
12	7,00	12	17,00
13	10,00	13	12,00
14	12,00	14	18,00
15	13,00	15	16,00
16	14,00		

Vocabulary Test

Name:	M / F	Date:
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**TASK:** Write the Greek equivalent for each of the following words.

1) tornado _____	21) landing _____	41) bud _____
2) carpenter _____	22) tube _____	42) bruise _____
3) controversy _____	23) custom _____	43) jest _____
4) tailor _____	24) rein _____	44) assent _____
5) evidence _____	25) peril _____	45) query _____
6) animosity _____	26) disdain _____	46) plumber _____
7) waist _____	27) dough _____	47) mane _____
8) mussel _____	28) loan _____	48) hatred _____
9) menace _____	29) sensor _____	49) famine _____
10) scent _____	30) invasion _____	50) pollen _____
11) mortgage _____	31) signet _____	51) tee _____
12) soul _____	32) hail _____	52) porch _____
13) flare _____	33) bane _____	53) jeopardy _____
14) account _____	34) creek _____	54) tool _____
15) ascent _____	35) fur _____	55) jug _____
16) hoax _____	36) quest _____	56) whisker _____
17) raid _____	37) excess _____	57) prejudice _____
18) plea _____	38) willow _____	58) leek _____
19) blister _____	39) peel _____	59) sage _____
20) pigeon _____	40) bias _____	60) rash _____

**Results of SHT tests on unrelated vocabulary for intermediate children for both class A and class B**

<b>Class A</b>	<b>Unrelated SHT</b>	<b>Class B</b>	<b>Unrelated SHT</b>
1	8,00	1	35,00
2	13,00	2	34,00
3	7,00	3	30,00
4	11,00	4	21,00
5	59,00	5	30,00
6	17,00	6	22,00
7	35,00	7	23,00
8	9,00	8	19,00
9	19,00	9	18,00
10	10,00	10	14,00
11	12,00	11	18,00
12	10,00	12	25,00
13	17,00	13	23,00
14	18,00	14	17,00
15	19,00	15	20,00
16	20,00		



## Vocabulary Test

Name: _____	M / F _____	Date: _____
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**TASK:** Write the Greek equivalent for each of the following words.

1) bud _____	21)animosity _____	41) scent _____
2) evidence _____	22) custom _____	42) tube _____
3) invasion _____	23)jeopardy _____	43) flare _____
4) leek _____	24) pigeon _____	44) peel _____
5) account _____	25) sage _____	45) signet _____
6) bruise _____	26)tornado _____	46) carpenter _____
7) excess _____	27) assent _____	47) query _____
8) jest _____	28) disdain _____	48) blister _____
9) menace _____	29) hoax _____	49) tool _____
10) porch _____	30) peril _____	50) landing _____
11) rein _____	31) rash _____	51)controversy _____
12) tailor _____	32) waist _____	52)plumber _____
13) willow _____	33) bane _____	53) tee _____
14) ascent _____	34) famine _____	54) hail _____
15) creek _____	35) loan _____	55) mane _____
16) hatred _____	36) pollen _____	56) dough _____
17)mortgage _____	37) soul _____	57) mussel _____
18)prejudice _____	38) bias _____	58) quest _____
19) sensor _____	39) fur _____	59) jug _____
20)whisker _____	40) plea _____	60) raid _____

**Results of LT tests on unrelated vocabulary for intermediate children for both class A and class B**

<b>Class A</b>	<b>Unrelated LT</b>	<b>Class B</b>	<b>Unrelated LT</b>
1	6,00	1	23,00
2	12,00	2	27,00
3	7,00	3	24,00
4	8,00	4	15,00
5	55,00	5	22,00
6	13,00	6	14,00
7	34,00	7	18,00
8	12,00	8	13,00
9	11,00	9	12,00
10	8,00	10	9,00
11	12,00	11	11,00
12	11,00	12	18,00
13	16,00	13	17,00
14	16,00	14	16,00
15	15,00	15	15,00
16	18,00		

Vocabulary Test

Name: _____	M / F _____	Date: _____
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**TASK:** Write the Greek equivalent for each of the following words.

1) peninsula _____	21) lamb _____	41) council _____
2) veal _____	22) tow _____	42) tedium _____
3) pain _____	23) twinkle _____	43) proof _____
4) punch _____	24) certitude _____	44) stream _____
5) flow _____	25) forgery _____	45) lobster _____
6) prosperity _____	26) cape _____	46) torture _____
7) smuggling _____	27) cod _____	47) gleam _____
8) witness _____	28) kernel _____	48) jury _____
9) summit _____	29) spat _____	49) ridge _____
10) doubt _____	30) glee _____	50) steak _____
11) boredom _____	31) mugging _____	51) counsel _____
12) squid _____	32) briber _____	52) quarrel _____
13) gloom _____	33) estuary _____	53) verdict _____
14) pane _____	34) shrimp _____	54) herring _____
15) loyalty _____	35) toe _____	55) stake _____
16) jab _____	36) torment _____	56) tributary _____
17) treason _____	37) ebb _____	57) colonel _____
18) terrorism _____	38) trial _____	58) trout _____
19) poverty _____	39) gorge _____	59) valley _____
20) cove _____	40) prawn _____	60) ham _____

**Results of SHT tests on related vocabulary for adult beginners for both class A and class B**

<b>Class A</b>	<b>Related SHT</b>	<b>Class B</b>	<b>Related SHT</b>
1	12,00	1	35,00
2	18,00	2	22,00
3	41,00	3	13,00
4	19,00	4	18,00
5	18,00	5	21,00
6	22,00	6	15,00
7	19,00	7	22,00
8	28,00	8	25,00
9	35,00	9	19,00
10	24,00	10	31,00
11	13,00	11	38,00
12	29,00	12	40,00
13	23,00	13	20,00
14	20,00	14	19,00
15	16,00	15	11,00
16	26,00		
17	39,00		

Vocabulary Test

Name: _____	M / F _____	Date: _____
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**TASK:** Write the Greek equivalent for each of the following words.

1) cod _____	21) flow _____	41) gleam _____
2) certitude _____	22) summit _____	42) counsel _____
3) witness _____	23) squid _____	43) stake _____
4) gloom _____	24) loyalty _____	44) trout _____
5) torment _____	25) torture _____	45) trial _____
6) quarrel _____	26) cape _____	46) boredom _____
7) lobster _____	27) ebb _____	47) twinkle _____
8) tedium _____	28) verdict _____	48) peninsula _____
9) herring _____	29) steak _____	49) prosperity _____
10) veal _____	30) smuggling _____	50) jab _____
11) poverty _____	31) council _____	51) kernel _____
12) gorge _____	32) tow _____	52) proof _____
13) tributary _____	33) colonel _____	53) jury _____
14) ham _____	34) terrorism _____	54) mugging _____
15) doubt _____	35) estuary _____	55) spat _____
16) treason _____	36) pain _____	56) pane _____
17) lamb _____	37) forgery _____	57) cove _____
18) ridge _____	38) stream _____	58) toe _____
19) punch _____	39) valley _____	59) prawn _____
20) bribery _____	40) glee _____	60) shrimp _____

**Results of LT tests on related vocabulary for adult beginners for both class A and class B**

<b>Class A</b>	<b>Related LT</b>	<b>Class B</b>	<b>Related LT</b>
1	9,00	1	24,00
2	10,00	2	20,00
3	36,00	3	9,00
4	17,00	4	14,00
5	12,00	5	19,00
6	19,00	6	11,00
7	20,00	7	18,00
8	26,00	8	24,00
9	32,00	9	17,00
10	18,00	10	30,00
11	11,00	11	31,00
12	22,00	12	32,00
13	20,00	13	16,00
14	12,00	14	14,00
15	18,00	15	8,00
16	22,00		
17	33,00		

Vocabulary Test

Name:	M / F	Date:
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TASK: Write the Greek equivalent for each of the following words.

1) tornado _____	21) landing _____	41) bud _____
2) carpenter _____	22) tube _____	42) bruise _____
3) controversy _____	23) custom _____	43) jest _____
4) tailor _____	24) rein _____	44) assent _____
5) evidence _____	25) peril _____	45) query _____
6) animosity _____	26) disdain _____	46) plumber _____
7) waist _____	27) dough _____	47) mane _____
8) mussel _____	28) loan _____	48) hatred _____
9) menace _____	29) sensor _____	49) famine _____
10) scent _____	30) invasion _____	50) pollen _____
11) mortgage _____	31) signet _____	51) tee _____
12) soul _____	32) hail _____	52) porch _____
13) flare _____	33) bane _____	53) jeopardy _____
14) account _____	34) creek _____	54) tool _____
15) ascent _____	35) fur _____	55) jug _____
16) hoax _____	36) quest _____	56) whisker _____
17) raid _____	37) excess _____	57) prejudice _____
18) plea _____	38) willow _____	58) leek _____
19) blister _____	39) peel _____	59) sage _____
20) pigeon _____	40) bias _____	60) rash _____

**Results of SHT tests on unrelated vocabulary for adult beginners for both class A and class B**

<b>Class A</b>	<b>Unrelated SHT</b>	<b>Class B</b>	<b>Unrelated SHT</b>
1	20,00	1	37,00
2	22,00	2	33,00
3	48,00	3	22,00
4	27,00	4	27,00
5	25,00	5	20,00
6	24,00	6	25,00
7	30,00	7	35,00
8	36,00	8	36,00
9	43,00	9	28,00
10	30,00	10	44,00
11	22,00	11	37,00
12	34,00	12	50,00
13	29,00	13	29,00
14	28,00	14	33,00
15	23,00	15	17,00
16	29,00		
17	43,00		



## Vocabulary Test

Name: _____	M / F _____	Date: _____
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**TASK:** Write the Greek equivalent for each of the following words.

1) bud _____	21)animosity _____	41) scent _____
2) evidence _____	22) custom _____	42) tube _____
3) invasion _____	23)jeopardy _____	43) flare _____
4) leek _____	24) pigeon _____	44) peel _____
5) account _____	25) sage _____	45) signet _____
6) bruise _____	26)tornado _____	46) carpenter _____
7) excess _____	27) assent _____	47) query _____
8) jest _____	28) disdain _____	48) blister _____
9) menace _____	29) hoax _____	49) tool _____
10) porch _____	30) peril _____	50) landing _____
11) rein _____	31) rash _____	51)controversy _____
12) tailor _____	32) waist _____	52)plumber _____
13) willow _____	33) bane _____	53) tee _____
14) ascent _____	34) famine _____	54) hail _____
15) creek _____	35) loan _____	55) mane _____
16) hatred _____	36) pollen _____	56) dough _____
17)mortgage _____	37) soul _____	57) mussel _____
18)prejudice _____	38) bias _____	58) quest _____
19) sensor _____	39) fur _____	59) jug _____
20)whisker _____	40) plea _____	60) raid _____

**Results of LT tests on unrelated vocabulary for adult beginners for both class A and class B**

<b>Class A</b>	<b>Unrelated LT</b>	<b>Class B</b>	<b>Unrelated LT</b>
1	18,00	1	33,00
2	23,00	2	20,00
3	42,00	3	19,00
4	25,00	4	25,00
5	23,00	5	17,00
6	22,00	6	24,00
7	29,00	7	32,00
8	31,00	8	34,00
9	38,00	9	24,00
10	26,00	10	38,00
11	23,00	11	30,00
12	29,00	12	37,00
13	26,00	13	27,00
14	27,00	14	30,00
15	17,00	15	13,00
16	25,00		
17	35,00		

**Variable One<sup>1</sup> (V1=Vocabulary): Related Vocabulary vs Unrelated Vocabulary**

**Group Statistics <sup>1</sup>**

	Groups	N	Mean	Std. Deviation	Std. Error Mean
[1] Everyone-re-SHT vs	1,00	63	21,1746	9,48435	1,19492
Everyone-un-SHT	2,00	63	25,6984	10,78176	1,35837
[2] Everyone-re-LT vs	1,00	63	16,8095	7,97346	1,00456
Everyone-un-LT	2,00	63	21,7460	9,73515	1,22651
[3] All-Children-re-SHT vs	1,00	31	18,8065	9,96467	1,78971
All-Children-un-SHT	2,00	31	20,4194	10,51277	1,88815
[4] Children-A-re-SHT vs	1,00	16	18,1875	11,11887	2,77972
Children-A-un-SHT	2,00	16	17,7500	12,95376	3,23844
[5] Children-B-re-SHT vs	1,00	15	19,4667	8,91120	2,30086
Children-B-un-SHT	2,00	15	23,2667	6,34110	1,63726
[6] All-Children-re-LT vs	1,00	31	14,0323	7,24101	1,30052
All-Children-un-LT	2,00	31	16,3871	9,39034	1,68655
[7] Children-A-re-LT vs	1,00	16	13,5000	7,50111	1,87528
Children-A-un-LT	2,00	16	15,8750	12,29024	3,07256
[8] Children-B-re-LT vs	1,00	15	14,6000	7,16938	1,85113
Children-B-un-LT	2,00	15	16,9333	5,14735	1,32904
[9] All-Adults-re-SHT vs	1,00	32	23,4688	8,53072	1,50803
All-Adults-un-SHT	2,00	32	30,8125	8,40675	1,48612
[10] Adults-A-re-SHT vs	1,00	17	23,6471	8,47748	2,05609
Adults-A-un-SHT	2,00	17	30,1765	8,16422	1,98011
[11] Adults-B-re-SHT vs	1,00	15	23,2667	8,88391	2,29382
Adults-B-un-SHT	2,00	15	31,5333	8,90318	2,29879
[12] All-Adults-re-LT vs	1,00	32	19,5000	7,82469	1,38322
All-Adults-un-LT	2,00	32	26,9375	6,90459	1,22057
[13] Adults-A-re-LT vs	1,00	17	19,8235	8,14122	1,97454
Adults-A-un-LT	2,00	17	27,0000	6,60492	1,60193
[14] Adults-B-re-LT vs	1,00	15	19,1333	7,71702	1,99253
Adults-B-un-LT	2,00	15	26,8667	7,46292	1,92692

<sup>1</sup>SPSS 12.0 was used for the analysis of all the data obtained from the present study. SPSS 12.0 for Windows (SPSS Inc., 1989-2003) provides a powerful statistical analysis and data management system in a graphical environment. SPSS (Statistical Package for the Social Sciences) is a data management and analysis product produced by SPSS, Inc. in Chicago, Illinois. It is one of the most useful, popular, and easy-to-use statistical analysis packages. Among its features are modules for statistical data analysis, including descriptive statistics such as plots, frequencies, charts, and lists, as well as sophisticated inferential and multivariate statistical procedures like analysis of variance (ANOVA), factor analysis, cluster analysis, and categorical data analysis.

Independent Samples Test <sup>2</sup>

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
[1]	Equal variances assumed	1,507	,222	-2,501	124	,014	-4,52381	1,80914	-8,10461	-,94301
	Equal variances not assumed			-2,501	122,016	,014	-4,52381	1,80914	-8,10519	-,94243
[2]	Equal variances assumed	3,079	,082	-3,114	124	,002	-4,93651	1,58540	-8,07445	-1,79857
	Equal variances not assumed			-3,114	119,367	,002	-4,93651	1,58540	-8,07565	-1,79737
[3]	Equal variances assumed	,047	,829	-,620	60	,538	-1,61290	2,60157	-6,81681	3,59101
	Equal variances not assumed			-,620	59,829	,538	-1,61290	2,60157	-6,81712	3,59131
[4]	Equal variances assumed	,058	,812	,103	30	,919	,43750	4,26782	-8,27856	9,15356
	Equal variances not assumed			,103	29,326	,919	,43750	4,26782	-8,28696	9,16196
[5]	Equal variances assumed	,483	,493	-1,346	28	,189	-3,80000	2,82393	-9,58457	1,98457
	Equal variances not assumed			-1,346	25,285	,190	-3,80000	2,82393	-9,61268	2,01268
[6]	Equal variances assumed	,346	,558	-1,106	60	,273	-2,35484	2,12975	-6,61497	1,90529
	Equal variances not assumed			-1,106	56,358	,274	-2,35484	2,12975	-6,62064	1,91096
[7]	Equal variances assumed	1,103	,302	-,660	30	,514	-2,37500	3,59962	-9,72641	4,97641
	Equal variances not assumed			-,660	24,813	,515	-2,37500	3,59962	-9,79139	5,04139
[8]	Equal variances assumed	,999	,326	-1,024	28	,315	-2,33333	2,27882	-7,00128	2,33462
	Equal variances not assumed			-1,024	25,403	,316	-2,33333	2,27882	-7,02287	2,35621
[9]	Equal variances assumed	,002	,962	-3,469	62	,001	-7,34375	2,11724	-11,57605	-3,11145

[10]	Equal variances not assumed			-3,469	61,987	,001	-7,34375	2,11724	-11,57607	-3,11143
	Equal variances assumed	,053	,820	-2,287	32	,029	-6,52941	2,85453	-12,34390	-,71492
[11]	Equal variances not assumed			-2,287	31,955	,029	-6,52941	2,85453	-12,34423	-,71460
	Equal variances assumed	,000	,996	-2,546	28	,017	-8,26667	3,24747	-14,91880	-1,61454
[12]	Equal variances not assumed			-2,546	28,000	,017	-8,26667	3,24747	-14,91880	-1,61453
	Equal variances assumed	,400	,529	-4,032	62	,000	-7,43750	1,84475	-11,12510	-3,74990
[13]	Equal variances not assumed			-4,032	61,054	,000	-7,43750	1,84475	-11,12624	-3,74876
	Equal variances assumed	,585	,450	-2,822	32	,008	-7,17647	2,54263	-12,35564	-1,99730
[14]	Equal variances not assumed			-2,822	30,696	,008	-7,17647	2,54263	-12,36428	-1,98866
	Equal variances assumed	,000	,991	-2,790	28	,009	-7,73333	2,77185	-13,41122	-2,05545
	Equal variances not assumed			-2,790	27,969	,009	-7,73333	2,77185	-13,41151	-2,05516

### Variable Two (V2 = Age): Children vs Adults

#### Group Statistics <sup>1</sup>

	Groups	N	Mean	Std. Deviation	Std. Error Mean
[15] All-Children-All-Vocabulary-SHT vs	1,00	62	19,6129	10,19057	1,29420
All-Adults-All-Vocabulary-SHT	2,00	64	27,1406	9,18050	1,14756
[16] All-Children-All-Vocabulary-LT vs	1,00	62	15,2097	8,40011	1,06682
All-Adults-All-Vocabulary-LT	2,00	64	23,2188	8,22398	1,02800
[17] All-Children-re-SHT vs	1,00	31	18,8065	9,96467	1,78971
All Adults-re-SHT	2,00	32	23,4688	8,53072	1,50803
[18] All-Children-re-LT vs	1,00	31	14,0323	7,24101	1,30052
All Adults-re-LT	2,00	32	19,5000	7,82469	1,38322
[19] All-Children-un-SHT vs	1,00	31	20,4194	10,51277	1,88815
All Adults-un-SHT	2,00	32	30,8125	8,40675	1,48612
[20] All-Children-un-LT vs	1,00	31	16,3871	9,39034	1,68655
All Adults-un-LT	2,00	32	26,9375	6,90459	1,22057

Independent Samples Test<sup>2</sup>

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
[15]	Equal variances assumed	,151	,698	-4,359	124	,000	-7,52772	1,72682	-10,94559	-4,10985	
	Equal variances not assumed			-4,352	121,754	,000	-7,52772	1,72970	-10,95190	-4,10354	
[16]	Equal variances assumed	1,512	,221	-5,408	124	,000	-8,00907	1,48101	-10,94040	-5,07774	
	Equal variances not assumed			-5,406	123,650	,000	-8,00907	1,48151	-10,94148	-5,07667	
[17]	Equal variances assumed	,000	,994	-1,997	61	,050	-4,66230	2,33453	-9,33048	,00589	
	Equal variances not assumed			-1,992	58,960	,051	-4,66230	2,34034	-9,34538	,02079	
[18]	Equal variances assumed	,908	,344	-2,876	61	,006	-5,46774	1,90097	-9,26896	-1,66652	
	Equal variances not assumed			-2,880	60,876	,005	-5,46774	1,89860	-9,26438	-1,67111	
[19]	Equal variances assumed	,089	,766	-4,341	61	,000	-10,39315	2,39433	-15,18091	-5,60538	
	Equal variances not assumed			-4,325	57,374	,000	-10,39315	2,40284	-15,20407	-5,58222	
[20]	Equal variances assumed	,093	,761	-5,092	61	,000	-10,55040	2,07190	-14,69342	-6,40739	
	Equal variances not assumed			-5,068	55,043	,000	-10,55040	2,08189	-14,72253	-6,37828	

**Variable Three (V3 = Class Quality): Class A vs Class B**

**Group Statistics <sup>1</sup>**

	Groups	N	Mean	Std. Deviation	Std. Error Mean
[21] Children-A-re-SHT vs	1,00	16	18,1875	11,11887	2,77972
Children-B-re-SHT	2,00	15	19,4667	8,91120	2,30086
[22] Children-A-re-LT vs	1,00	16	13,5000	7,50111	1,87528
Children-B-re-LT	2,00	15	14,6000	7,16938	1,85113
[23] Children-A-un-SHT vs	1,00	16	17,7500	12,95376	3,23844
Children-B-un-SHT	2,00	15	23,2667	6,34110	1,63726
[24] Children-A-un-LT vs	1,00	16	15,8750	12,29024	3,07256
Children-B-un-LT	2,00	15	16,9333	5,14735	1,32904
[25] Adults-A-re-SHT vs	1,00	17	23,6471	8,47748	2,05609
Adults-B-re-SHT	2,00	15	23,2667	8,88391	2,29382
[26] Adults-A-re-LT vs	1,00	17	19,8235	8,14122	1,97454
Adults-B-re-LT	2,00	15	19,1333	7,71702	1,99253
[27] Adults-A-un-SHT vs	1,00	17	30,1765	8,16422	1,98011
Adults-B-un-SHT	2,00	15	31,5333	8,90318	2,29879
[28] Adults-A-un-LT vs	1,00	17	27,0000	6,60492	1,60193
Adults-B-un-LT	2,00	15	26,8667	7,46292	1,92692

**Independent Samples Test <sup>2</sup>**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
[21]	Equal variances assumed	,108	,745	-,352	29	,727	-1,27917	3,63475	-8,71306	6,15473
	Equal variances not assumed			-,354	28,341	,726	-1,27917	3,60843	-8,66670	6,10837
[22]	Equal variances assumed	,249	,621	-,417	29	,680	-1,10000	2,63900	-6,49736	4,29736
	Equal variances not assumed			-,417	28,987	,679	-1,10000	2,63502	-6,48933	4,28933

[23]	Equal variances assumed	1,127	,297	-1,489	29	,147	-5,51667	3,70379	-13,09178	2,05844
	Equal variances not assumed			-1,520	22,101	,143	-5,51667	3,62879	-13,04033	2,00699
[24]	Equal variances assumed	1,721	,200	-.309	29	,760	-1,05833	3,42693	-8,06719	5,95053
	Equal variances not assumed			-.316	20,374	,755	-1,05833	3,34768	-8,03327	5,91660
[25]	Equal variances assumed	,045	,834	,124	30	,902	,38039	3,07114	-5,89172	6,65250
	Equal variances not assumed			,123	29,098	,903	,38039	3,08044	-5,91889	6,67967
[26]	Equal variances assumed	,000	,997	,245	30	,808	,69020	2,81487	-5,05853	6,43892
	Equal variances not assumed			,246	29,828	,807	,69020	2,80516	-5,04010	6,42049
[27]	Equal variances assumed	,190	,666	-.450	30	,656	-1,35686	3,01713	-7,51866	4,80494
	Equal variances not assumed			-.447	28,671	,658	-1,35686	3,03402	-7,56523	4,85150
[28]	Equal variances assumed	,694	,411	,054	30	,958	,13333	2,48624	-4,94424	5,21090
	Equal variances not assumed			,053	28,237	,958	,13333	2,50583	-4,99769	5,26436

**Variable Four (V4 = Time): Short Term Test (SHT) vs Long Term Test (LT)**

**Paired Samples Statistics <sup>3</sup>**

		Mean	N	Std. Deviation	Std. Error Mean
[29]	Everyone (Children + Adults)-All-Vocabulary-SHT	23,4365	126	10,36494	,92338
	Everyone (Children + Adults)-All-Vocabulary-LT	19,2778	126	9,20229	,81981
[30]	All-Children-All-Vocabulary-SHT	19,6129	62	10,19057	1,29420
	All-Children-All-Vocabulary-LT	15,2097	62	8,40011	1,06682
[31]	Children-A-re-SHT	18,1875	16	11,11887	2,77972
	Children-A-re-LT	13,5000	16	7,50111	1,87528
[32]	Children-A-un-SHT	17,7500	16	12,95376	3,23844
	Children-A-un-LT	15,8750	16	12,29024	3,07256
[33]	Children-B-re-SHT	19,4667	15	8,91120	2,30086
	Children-B-re-LT	14,6000	15	7,16938	1,85113
[34]	Children-B-un-SHT	23,2667	15	6,34110	1,63726
	Children-B-un-LT	16,9333	15	5,14735	1,32904



[35]	All-Adults-All-Vocabulary-SHT	27,1406	64	9,18050	1,14756
	All-Adults-All-Vocabulary-LT	23,2188	64	8,22398	1,02800
[36]	Adults-A-re-SHT	23,6471	17	8,47748	2,05609
	Adults-A-re-LT	19,8235	17	8,14122	1,97454
[37]	Adults-A-un-SHT	30,1765	17	8,16422	1,98011
	Adults-A-un-LT	27,0000	17	6,60492	1,60193
[38]	Adults-B-re-SHT	23,2667	15	8,88391	2,29382
	Adults-B-re-LT	19,1333	15	7,71702	1,99253
[39]	Adults-B-un-SHT	31,5333	15	8,90318	2,29879
	Adults-B-un-LT	26,8667	15	7,46292	1,92692

Paired Samples Correlations <sup>4</sup>

	N	Correlation	Sig.
[29] Everyone (Children + Adults)-All-Vocabulary-SHT & Everyone (Children + Adults)-All-Vocabulary-LT	126	,938	,000
[30] All-Children-All-Vocabulary-SHT & All-Children-All-Vocabulary-LT	62	,915	,000
[31] Children-A-re-SHT & Children-A-re-LT	16	,850	,000
[32] Children-A-un-SHT & Children-A-un-LT	16	,982	,000
[33] Children-B-re-SHT & Children-B-re-LT	15	,920	,000
[34] Children-B-un-SHT & Children-B-un-LT	15	,942	,000
[35] All-Adults-All-Vocabulary-SHT & All-Adults-All-Vocabulary-LT	64	,948	,000
[36] Adults-A-re-SHT & Adults-A-re-LT	17	,942	,000
[37] Adults-A-un-SHT & Adults-A-un-LT	17	,964	,000
[38] Adults-B-re-SHT & Adults-B-re-LT	15	,955	,000
[39] Adults-B-un-SHT & Adults-B-un-L	15	,912	,000

Paired Samples Test <sup>5</sup>

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
[29]	Everyone (Children + Adults)-All-Vocabulary-SHT & Everyone (Children + Adults)-All-Vocabulary-LT	4,15873	3,62527	,32296	3,51954	4,79792	12,877	125	,000
[30]	All-Children-All-Vocabulary-SHT & All-Children-All-Vocabulary-LT	4,40323	4,22118	,53609	3,33125	5,47520	8,214	61	,000
[31]	Children-A-re-SHT & Children-A-re-LT	4,68750	6,17218	1,54305	1,39858	7,97642	3,038	15	,008
[32]	Children-A-un-SHT & Children-A-un-LT	1,87500	2,50000	,62500	,54284	3,20716	3,000	15	,009

[33]	Children-B-re-SHT & Children-B-re-LT	4,86667	3,64234	,94045	2,84960	6,88373	5,175	14	,000
[34]	Children-B-un-SHT & Children-B-un-LT	6,33333	2,28869	,59094	5,06590	7,60077	10,717	14	,000
[35]	All-Adults-All-Vocabulary-SHT & All-Adults-All-Vocabulary-LT	3,92188	2,95095	,36887	3,18475	4,65900	10,632	63	,000
[36]	Adults-A-re-SHT & Adults-A-re-LT	3,82353	2,85559	,69258	2,35532	5,29174	5,521	16	,000
[37]	Adults-A-un-SHT & Adults-A-un-LT	3,17647	2,50588	,60776	1,88807	4,46487	5,226	16	,000
[38]	Adults-B-re-SHT & Adults-B-re-LT	4,13333	2,74816	,70957	2,61145	5,65521	5,825	14	,000
[39]	Adults-B-un-SHT & Adults-B-un-L	4,66667	3,71612	,95950	2,60875	6,72458	4,864	14	,000

## NOTES

1 The Independent-Samples t-test procedure compares means for two groups of cases. The first table (Group Statistics table) of each independent-samples t-test output displays the number of cases, mean value (for the two groups), standard deviation, and standard error for the test variable(s) within categories defined by the grouping variable.

2 The second table (Independent Samples Test) of each paired-samples t-test output shows the mean of the differences, standard error difference, the confidence interval for the difference, the obtained value for t and the "Levene's Test for Equality of Variances". The Levene's Test is a test of the homogeneity of variance assumption. When the value for F is large and the P-value is less than .05, this indicates that the variances are heterogenous which violates a key assumption of the t-test. If the significance value for the Levene test is high (typically greater than 0.05) we use the results that assume equal variances for both groups. If the significance value for the Levene test is low we use the results that do not assume equal variances for both groups. A low significance value for the t-test (typically less than 0.05) indicates that there is a significant difference between the two group means. If the confidence interval for the mean difference does not contain zero, this also indicates that the difference is significant. If the significance value is high and the confidence interval for the mean difference contains zero, then we cannot conclude that there is a significant difference between the two group means. The output also shows the degrees of freedom (df) and probability (2-tailed significance). Sometimes we find that the calculated t has a minus sign. This simply indicates that the mean of Sample 1 is smaller than the mean of Sample 2.

3 The first table (Paired Samples Statistics) of each paired-sample t-test output displays the number of cases N (participants in the study), mean value X, standard deviation SD, and standard error for the pair(s) of variables compared in the paired-samples t-test procedure.

4 The second table (Paired Samples Correlations) of each paired-samples t-test output table displays the value of the correlation coefficient and the significance value for each pair of variables used in the Paired Samples t-test procedure. Since the two variables represent the same group at different times or two related groups, the correlation is fairly high and the significance value low (typically less than 0.05).

5 The third table (Paired Samples Test) of each paired-samples t-test output shows the mean of the differences, standard deviation of the differences, standard error of the mean, the confidence interval for the difference, the degrees of freedom (df) and the obtained value for t. The 2-tailed Sig[nificance] which is stated as a probability is shown in this table. A low significance value for the t-test (typically less than 0.05) indicates that there is a significant difference between the two variables. If the confidence interval for the mean difference does not contain zero, this also indicates that the difference is significant. If the significance value is high and the confidence interval for the mean difference contains zero, then we cannot conclude that there is a significant difference between the means for the two variables. Sometimes we find that the calculated t has a minus sign. This simply indicates that the mean of Sample 1 is smaller than the mean of Sample 2.

**Stage 1: Statistical analysis within semantically related groups (horizontally)****Descriptives <sup>1</sup>**

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Homonyms - Adults / Children	Adults (Short term)	10	12,00	5,812	1,838	7,84	16,16	6	22
	Children (Short term)	10	15,60	8,514	2,692	9,51	21,69	7	29
	Adults (Long term)	10	10,20	6,408	2,026	5,62	14,78	3	23
	Children (Long term)	10	12,00	9,487	3,000	5,21	18,79	3	28
	Total	40	12,45	7,663	1,212	10,00	14,90	3	29
Synonyms - Adults / Children	Adults (Short term)	10	11,70	4,057	1,283	8,80	14,60	6	16
	Children (Short term)	10	2,80	2,394	,757	1,09	4,51	0	6
	Adults (Long term)	10	9,50	3,808	1,204	6,78	12,22	5	15
	Children (Long term)	10	1,80	1,874	,593	,46	3,14	0	5
	Total	40	6,45	5,262	,832	4,77	8,13	0	16
Antonyms - Adults / Children	Adults (Short term)	10	12,30	2,312	,731	10,65	13,95	10	16
	Children (Short term)	10	11,00	3,712	1,174	8,34	13,66	6	18
	Adults (Long term)	10	10,60	1,776	,562	9,33	11,87	8	13
	Children (Long term)	10	8,10	3,315	1,048	5,73	10,47	3	13
	Total	40	10,50	3,170	,501	9,49	11,51	3	18
Topic related (Group 1) - Adults / Children	Adults (Short term)	10	16,60	6,786	2,146	11,75	21,45	4	27
	Children (Short term)	10	12,00	6,928	2,191	7,04	16,96	5	27
	Adults (Long term)	10	14,70	7,056	2,231	9,65	19,75	4	26
	Children (Long term)	10	8,50	6,754	2,136	3,67	13,33	2	24
	Total	40	12,95	7,296	1,154	10,62	15,28	2	27
Topic related (Group 2) - Adults / Children	Adults (Short term)	10	9,80	4,022	1,272	6,92	12,68	2	15
	Children (Short term)	10	9,40	6,736	2,130	4,58	14,22	4	24
	Adults (Long term)	10	6,40	4,006	1,267	3,53	9,27	1	12
	Children (Long term)	10	7,50	6,294	1,990	3,00	12,00	2	20
	Total	40	8,28	5,387	,852	6,55	10,00	1	24
Topic related (Group 3) - Adults / Children	Adults (Short term)	10	11,70	4,923	1,557	8,18	15,22	5	20
	Children (Short term)	10	6,40	6,753	2,135	1,57	11,23	1	25
	Adults (Long term)	10	10,20	4,849	1,533	6,73	13,67	5	20
	Children (Long term)	10	5,20	7,540	2,384	-,19	10,59	0	26
	Total	40	8,38	6,476	1,024	6,30	10,45	0	26
Topic related (Total) - Adults / Children	Adults (Short term)	30	12,70	5,943	1,085	10,48	14,92	2	27
	Children (Short term)	30	9,27	6,968	1,272	6,66	11,87	1	27
	Adults (Long term)	30	10,43	6,296	1,149	8,08	12,78	1	26
	Children (Long term)	30	7,07	6,787	1,239	4,53	9,60	0	26
	Total	120	9,87	6,745	,616	8,65	11,09	0	27

Test of Homogeneity of Variances <sup>2</sup>

	Levene Statistic	df1	df2	Sig.
Homonyms - Adults / Children	1,243	3	36	,308
Synonyms - Adults / Children	4,948	3	36	,006
Antonyms - Adults / Children	1,964	3	36	,137
Topic related (Group 1) - Adults / Children	,033	3	36	,992
Topic related (Group 2) - Adults / Children	1,697	3	36	,185
Topic related (Group 3) - Adults / Children	,057	3	36	,982
Topic related (Total) - Adults / Children	,208	3	116	,891

One-way ANOVA <sup>3</sup>

		Sum of Squares	df	Mean Square	F	Sig.
Homonyms - Adults / Children	Between Groups	153,900	3	51,300	,865	,468
	Within Groups	2136,000	36	59,333		
	Total	2289,900	39			
Synonyms - Adults / Children	Between Groups	718,100	3	239,367	23,818	,000
	Within Groups	361,800	36	10,050		
	Total	1079,900	39			
Antonyms - Adults / Children	Between Groups	92,600	3	30,867	3,711	,020
	Within Groups	299,400	36	8,317		
	Total	392,000	39			
Topic related (Group 1) - Adults / Children	Between Groups	370,900	3	123,633	2,610	,066
	Within Groups	1705,000	36	47,361		
	Total	2075,900	39			
Topic related (Group 2) - Adults / Children	Between Groups	77,075	3	25,692	,877	,462
	Within Groups	1054,900	36	29,303		
	Total	1131,975	39			
Topic related (Group 3) - Adults / Children	Between Groups	283,675	3	94,558	2,518	,073
	Within Groups	1351,700	36	37,547		
	Total	1635,375	39			
Topic related (Total) - Adults / Children	Between Groups	496,467	3	165,489	3,904	,011
	Within Groups	4917,400	116	42,391		
	Total	5413,867	119			

Post Hoc Tests <sup>4</sup>

## Multiple Comparisons

## Tukey HSD

Dependent Variable	(I) GROUP3	(J) GROUP3	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Homonyms - Adults / Children	Adults (Short term)	Children (Short term)	-3,60	3,445	,724	-12,88	5,68
		Adults (Long term)	1,80	3,445	,953	-7,48	11,08
		Children (Long term)	,00	3,445	1,000	-9,28	9,28
	Children (Short term)	Adults (Short term)	3,60	3,445	,724	-5,68	12,88
		Adults (Long term)	5,40	3,445	,409	-3,88	14,68
		Children (Long term)	3,60	3,445	,724	-5,68	12,88
	Adults (Long term)	Adults (Short term)	-1,80	3,445	,953	-11,08	7,48
		Children (Short term)	-5,40	3,445	,409	-14,68	3,88
		Children (Long term)	-1,80	3,445	,953	-11,08	7,48
	Children (Long term)	Adults (Short term)	,00	3,445	1,000	-9,28	9,28
		Children (Short term)	-3,60	3,445	,724	-12,88	5,68
		Adults (Long term)	1,80	3,445	,953	-7,48	11,08
Synonyms - Adults / Children	Adults (Short term)	Children (Short term)	8,90(*)	1,418	,000	5,08	12,72
		Adults (Long term)	2,20	1,418	,418	-1,62	6,02
		Children (Long term)	9,90(*)	1,418	,000	6,08	13,72
	Children (Short term)	Adults (Short term)	-8,90(*)	1,418	,000	-12,72	-5,08
		Adults (Long term)	-6,70(*)	1,418	,000	-10,52	-2,88
		Children (Long term)	1,00	1,418	,894	-2,82	4,82
	Adults (Long term)	Adults (Short term)	-2,20	1,418	,418	-6,02	1,62
		Children (Short term)	6,70(*)	1,418	,000	2,88	10,52
		Children (Long term)	7,70(*)	1,418	,000	3,88	11,52
	Children (Long term)	Adults (Short term)	-9,90(*)	1,418	,000	-13,72	-6,08
		Children (Short term)	-1,00	1,418	,894	-4,82	2,82
		Adults (Long term)	-7,70(*)	1,418	,000	-11,52	-3,88
Antonyms - Adults / Children	Adults (Short term)	Children (Short term)	1,30	1,290	,746	-2,17	4,77
		Adults (Long term)	1,70	1,290	,558	-1,77	5,17
		Children (Long term)	4,20(*)	1,290	,013	,73	7,67
	Children (Short term)	Adults (Short term)	-1,30	1,290	,746	-4,77	2,17
		Adults (Long term)	,40	1,290	,989	-3,07	3,87
		Children (Long term)	2,90	1,290	,130	-,57	6,37
	Adults (Long term)	Adults (Short term)	-1,70	1,290	,558	-5,17	1,77
		Children (Short term)	-,40	1,290	,989	-3,87	3,07
		Children (Long term)	2,50	1,290	,230	-,97	5,97
	Children (Long term)	Adults (Short term)	-4,20(*)	1,290	,013	-7,67	-,73
		Children (Short term)	-2,90	1,290	,130	-6,37	,57
		Adults (Long term)	-2,50	1,290	,230	-5,97	,97
Topic related (Group 1) - Adults / Children	Adults (Short term)	Children (Short term)	4,60	3,078	,451	-3,69	12,89
		Adults (Long term)	1,90	3,078	,926	-6,39	10,19
		Children (Long term)	8,10	3,078	,057	-,19	16,39
	Children (Short term)	Adults (Short term)	-4,60	3,078	,451	-12,89	3,69
		Adults (Long term)	-2,70	3,078	,817	-10,99	5,59
		Children (Long term)	3,50	3,078	,669	-4,79	11,79
	Adults (Long term)	Adults (Short term)	-1,90	3,078	,926	-10,19	6,39
		Children (Short term)	2,70	3,078	,817	-5,59	10,99

Topic related (Group 2) - Adults / Children	Children (Long term)	Children (Long term)	6,20	3,078	,202	-2,09	14,49
		Adults (Short term)	-8,10	3,078	,057	-16,39	,19
		Children (Short term)	-3,50	3,078	,669	-11,79	4,79
	Adults (Short term)	Adults (Long term)	-6,20	3,078	,202	-14,49	2,09
		Children (Short term)	,40	2,421	,998	-6,12	6,92
		Adults (Long term)	3,40	2,421	,505	-3,12	9,92
	Children (Short term)	Children (Long term)	2,30	2,421	,778	-4,22	8,82
		Adults (Short term)	-,40	2,421	,998	-6,92	6,12
		Adults (Long term)	3,00	2,421	,607	-3,52	9,52
	Adults (Long term)	Children (Long term)	1,90	2,421	,861	-4,62	8,42
		Adults (Short term)	-3,40	2,421	,505	-9,92	3,12
		Children (Short term)	-3,00	2,421	,607	-9,52	3,52
Topic related (Group 3) - Adults / Children	Children (Long term)	Children (Long term)	-1,10	2,421	,968	-7,62	5,42
		Adults (Short term)	-2,30	2,421	,778	-8,82	4,22
		Children (Short term)	-1,90	2,421	,861	-8,42	4,62
	Adults (Short term)	Adults (Long term)	1,10	2,421	,968	-5,42	7,62
		Children (Short term)	5,30	2,740	,232	-2,08	12,68
		Adults (Long term)	1,50	2,740	,947	-5,88	8,88
Topic related (Total) - Adults / Children	Children (Short term)	Children (Long term)	6,50	2,740	,101	-,88	13,88
		Adults (Short term)	-5,30	2,740	,232	-12,68	2,08
		Adults (Long term)	-3,80	2,740	,516	-11,18	3,58
	Adults (Long term)	Children (Long term)	1,20	2,740	,971	-6,18	8,58
		Adults (Short term)	-1,50	2,740	,947	-8,88	5,88
		Children (Short term)	3,80	2,740	,516	-3,58	11,18
Topic related (Total) - Adults / Children	Children (Long term)	Children (Long term)	5,00	2,740	,279	-2,38	12,38
		Adults (Short term)	-6,50	2,740	,101	-13,88	,88
		Children (Short term)	-1,20	2,740	,971	-8,58	6,18
	Adults (Short term)	Adults (Long term)	-5,00	2,740	,279	-12,38	2,38
		Children (Short term)	3,43	1,681	,179	-,95	7,82
		Adults (Long term)	2,27	1,681	,534	-2,12	6,65
Topic related (Total) - Adults / Children	Children (Short term)	Children (Long term)	5,63(*)	1,681	,006	1,25	10,02
		Adults (Short term)	-3,43	1,681	,179	-7,82	,95
		Adults (Long term)	-1,17	1,681	,899	-5,55	3,22
	Adults (Long term)	Children (Long term)	2,20	1,681	,559	-2,18	6,58
		Adults (Short term)	-2,27	1,681	,534	-6,65	2,12
		Children (Short term)	1,17	1,681	,899	-3,22	5,55
Children (Long term)	Children (Long term)	3,37	1,681	,193	-1,02	7,75	
	Adults (Short term)	-5,63(*)	1,681	,006	-10,02	-1,25	
	Children (Short term)	-2,20	1,681	,559	-6,58	2,18	
		Adults (Long term)	-3,37	1,681	,193	-7,75	1,02

\* The mean difference is significant at the .05 level.

**Stage 2: Statistical analysis across semantically related groups**

**Descriptives <sup>1</sup>**

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Short term / Adults	Homonyms	10	12,00	5,812	1,838	7,84	16,16	6	22
	Synonyms	10	11,70	4,057	1,283	8,80	14,60	6	16
	Antonyms	10	12,30	2,312	,731	10,65	13,95	10	16
	Topic related (1)	10	16,60	6,786	2,146	11,75	21,45	4	27
	Topic related (2)	10	9,80	4,022	1,272	6,92	12,68	2	15
	Topic related (3)	10	11,70	4,923	1,557	8,18	15,22	5	20
	Topic related (Total)	30	12,70	5,943	1,085	10,48	14,92	2	27
	Total	90	12,47	5,364	,565	11,34	13,59	2	27
Short term / Children	Homonyms	10	15,60	8,514	2,692	9,51	21,69	7	29
	Synonyms	10	2,80	2,394	,757	1,09	4,51	0	6
	Antonyms	10	11,00	3,712	1,174	8,34	13,66	6	18
	Topic related (1)	10	12,00	6,928	2,191	7,04	16,96	5	27
	Topic related (2)	10	9,40	6,736	2,130	4,58	14,22	4	24
	Topic related (3)	10	6,40	6,753	2,135	1,57	11,23	1	25
	Topic related (Total)	30	9,27	6,968	1,272	6,66	11,87	1	27
	Total	90	9,44	7,103	,749	7,96	10,93	0	29
Long term / Adults	Homonyms	10	10,20	6,408	2,026	5,62	14,78	3	23
	Synonyms	10	9,50	3,808	1,204	6,78	12,22	5	15
	Antonyms	10	10,60	1,776	,562	9,33	11,87	8	13
	Topic related (1)	10	14,70	7,056	2,231	9,65	19,75	4	26
	Topic related (2)	10	6,40	4,006	1,267	3,53	9,27	1	12
	Topic related (3)	10	10,20	4,849	1,533	6,73	13,67	5	20
	Topic related (Total)	30	7,07	6,787	1,239	4,53	9,60	0	26
	Total	90	9,20	6,021	,635	7,94	10,46	0	26
Long term / Children	Homonyms	10	12,00	9,487	3,000	5,21	18,79	3	28
	Synonyms	10	1,80	1,874	,593	,46	3,14	0	5
	Antonyms	10	8,10	3,315	1,048	5,73	10,47	3	13
	Topic related (1)	10	8,50	6,754	2,136	3,67	13,33	2	24
	Topic related (2)	10	7,50	6,294	1,990	3,00	12,00	2	20
	Topic related (3)	10	5,20	7,540	2,384	-,19	10,59	0	26
	Topic related (Total)	30	7,07	6,787	1,239	4,53	9,60	0	26
	Total	90	7,14	6,823	,719	5,72	8,57	0	28

**Test of Homogeneity of Variances <sup>2</sup>**

	Levene Statistic	df1	df2	Sig.
Short term / Adults	1,534	6	83	,177
Short term / Children	2,103	6	83	,061
Long term / Adults	2,081	6	83	,064
Long term / Children	2,330	6	83	,040

**One-way ANOVA <sup>3</sup>**

		Sum of Squares	df	Mean Square	F	Sig.
Short term / Adults	Between Groups	257,800	6	42,967	1,549	,173
	Within Groups	2302,600	83	27,742		
	Total	2560,400	89			
Short term /Children	Between Groups	1003,556	6	167,259	3,982	,001
	Within Groups	3486,667	83	42,008		
	Total	4490,222	89			
Long term / Adults	Between Groups	557,933	6	92,989	2,892	,013
	Within Groups	2668,467	83	32,150		
	Total	3226,400	89			
Long term / Children	Between Groups	588,156	6	98,026	2,289	,043
	Within Groups	3554,967	83	42,831		
	Total	4143,122	89			

**Post Hoc Tests <sup>4</sup>**

**Multiple Comparisons**

**Tukey HSD**

Dependent Variable	(I) GROUP	(J) GROUP	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Short term / Adults	Homonyms	Synonyms	,30	2,356	1,000	-6,82	7,42
		Antonyms	-,30	2,356	1,000	-7,42	6,82
		Topic related (1)	-4,60	2,356	,452	-11,72	2,52
		Topic related (2)	2,20	2,356	,966	-4,92	9,32
		Topic related (3)	,30	2,356	1,000	-6,82	7,42
		Topic related (Total)	-,70	1,923	1,000	-6,51	5,11
	Synonyms	Homonyms	-,30	2,356	1,000	-7,42	6,82
		Antonyms	-,60	2,356	1,000	-7,72	6,52
		Topic related (1)	-4,90	2,356	,374	-12,02	2,22
		Topic related (2)	1,90	2,356	,984	-5,22	9,02
		Topic related (3)	,00	2,356	1,000	-7,12	7,12
		Topic related (Total)	-1,00	1,923	,998	-6,81	4,81
	Antonyms	Homonyms	,30	2,356	1,000	-6,82	7,42
		Synonyms	,60	2,356	1,000	-6,52	7,72
		Topic related (1)	-4,30	2,356	,535	-11,42	2,82
		Topic related (2)	2,50	2,356	,937	-4,62	9,62
		Topic related (3)	,60	2,356	1,000	-6,52	7,72
		Topic related (Total)	-,40	1,923	1,000	-6,21	5,41
	Topic related (1)	Homonyms	4,60	2,356	,452	-2,52	11,72
		Synonyms	4,90	2,356	,374	-2,22	12,02
		Antonyms	4,30	2,356	,535	-2,82	11,42
		Topic related (2)	6,80	2,356	,071	-,32	13,92
		Topic related (3)	4,90	2,356	,374	-2,22	12,02
		Topic related (Total)	3,90	1,923	,405	-1,91	9,71



Short term / Children	Topic related (2)	Homonyms	-2,20	2,356	,966	-9,32	4,92	
		Synonyms	-1,90	2,356	,984	-9,02	5,22	
		Antonyms	-2,50	2,356	,937	-9,62	4,62	
		Topic related (1)	-6,80	2,356	,071	-13,92	,32	
		Topic related (3)	-1,90	2,356	,984	-9,02	5,22	
		Topic related (Total)	-2,90	1,923	,739	-8,71	2,91	
	Topic related (3)	Homonyms	-,30	2,356	1,000	-7,42	6,82	
		Synonyms	,00	2,356	1,000	-7,12	7,12	
		Antonyms	-,60	2,356	1,000	-7,72	6,52	
		Topic related (1)	-4,90	2,356	,374	-12,02	2,22	
		Topic related (2)	1,90	2,356	,984	-5,22	9,02	
		Topic related (Total)	-1,00	1,923	,998	-6,81	4,81	
	Topic related (Total)	Homonyms	,70	1,923	1,000	-5,11	6,51	
		Synonyms	1,00	1,923	,998	-4,81	6,81	
		Antonyms	,40	1,923	1,000	-5,41	6,21	
		Topic related (1)	-3,90	1,923	,405	-9,71	1,91	
		Topic related (2)	2,90	1,923	,739	-2,91	8,71	
		Topic related (3)	1,00	1,923	,998	-4,81	6,81	
	Homonyms	Synonyms		12,80(*)	2,899	,001	4,04	21,56
			Antonyms	4,60	2,899	,691	-4,16	13,36
			Topic related (1)	3,60	2,899	,875	-5,16	12,36
			Topic related (2)	6,20	2,899	,340	-2,56	14,96
			Topic related (3)	9,20(*)	2,899	,033	,44	17,96
			Topic related (Total)	6,33	2,367	,117	-,82	13,49
		Antonyms	Homonyms	-12,80(*)	2,899	,001	-21,56	-4,04
			Antonyms	-8,20	2,899	,082	-16,96	,56
			Topic related (1)	-9,20(*)	2,899	,033	-17,96	-,44
			Topic related (2)	-6,60	2,899	,268	-15,36	2,16
			Topic related (3)	-3,60	2,899	,875	-12,36	5,16
			Topic related (Total)	-6,47	2,367	,103	-13,62	,69
	Topic related (1)	Synonyms	Homonyms	-4,60	2,899	,691	-13,36	4,16
			Synonyms	8,20	2,899	,082	-,56	16,96
			Topic related (1)	-1,00	2,899	1,000	-9,76	7,76
			Topic related (2)	1,60	2,899	,998	-7,16	10,36
			Topic related (3)	4,60	2,899	,691	-4,16	13,36
			Topic related (Total)	1,73	2,367	,990	-5,42	8,89
Topic related (2)	Antonyms	Homonyms	-3,60	2,899	,875	-12,36	5,16	
		Synonyms	9,20(*)	2,899	,033	,44	17,96	
		Antonyms	1,00	2,899	1,000	-7,76	9,76	
		Topic related (2)	2,60	2,899	,972	-6,16	11,36	
		Topic related (3)	5,60	2,899	,466	-3,16	14,36	
		Topic related (Total)	2,73	2,367	,909	-4,42	9,89	
Topic related (2)	Homonyms	Homonyms	-6,20	2,899	,340	-14,96	2,56	
		Synonyms	6,60	2,899	,268	-2,16	15,36	
		Antonyms	-1,60	2,899	,998	-10,36	7,16	
		Topic related (1)	-2,60	2,899	,972	-11,36	6,16	
		Topic related (3)	3,00	2,899	,944	-5,76	11,76	
		Topic related (Total)	,13	2,367	1,000	-7,02	7,29	
Topic related	Homonyms	-9,20(*)	2,899	,033	-17,96	-,44		

Long term / Adults	(3)	Synonyms	3,60	2,899	,875	-5,16	12,36		
		Antonyms	-4,60	2,899	,691	-13,36	4,16		
		Topic related (1)	-5,60	2,899	,466	-14,36	3,16		
		Topic related (2)	-3,00	2,899	,944	-11,76	5,76		
		Topic related (Total)	-2,87	2,367	,888	-10,02	4,29		
		Topic related (Total)	Homonyms	-6,33	2,367	,117	-13,49	,82	
			Synonyms	6,47	2,367	,103	-.69	13,62	
			Antonyms	-1,73	2,367	,990	-8,89	5,42	
			Topic related (1)	-2,73	2,367	,909	-9,89	4,42	
			Topic related (2)	-,13	2,367	1,000	-7,29	7,02	
			Topic related (3)	2,87	2,367	,888	-4,29	10,02	
			Homonyms	Synonyms	,70	2,536	1,000	-6,96	8,36
				Antonyms	-,40	2,536	1,000	-8,06	7,26
				Topic related (1)	-4,50	2,536	,569	-12,16	3,16
				Topic related (2)	3,80	2,536	,745	-3,86	11,46
				Topic related (3)	,00	2,536	1,000	-7,66	7,66
				Topic related (Total)	3,13	2,070	,736	-3,12	9,39
			Synonyms	Homonyms	-,70	2,536	1,000	-8,36	6,96
				Antonyms	-1,10	2,536	,999	-8,76	6,56
				Topic related (1)	-5,20	2,536	,392	-12,86	2,46
				Topic related (2)	3,10	2,536	,883	-4,56	10,76
				Topic related (3)	-,70	2,536	1,000	-8,36	6,96
				Topic related (Total)	2,43	2,070	,901	-3,82	8,69
			Antonyms	Homonyms	,40	2,536	1,000	-7,26	8,06
				Synonyms	1,10	2,536	,999	-6,56	8,76
				Topic related (1)	-4,10	2,536	,672	-11,76	3,56
				Topic related (2)	4,20	2,536	,647	-3,46	11,86
				Topic related (3)	,40	2,536	1,000	-7,26	8,06
				Topic related (Total)	3,53	2,070	,614	-2,72	9,79
			Topic related (1)	Homonyms	4,50	2,536	,569	-3,16	12,16
				Synonyms	5,20	2,536	,392	-2,46	12,86
				Antonyms	4,10	2,536	,672	-3,56	11,76
				Topic related (2)	8,30(*)	2,536	,025	,64	15,96
				Topic related (3)	4,50	2,536	,569	-3,16	12,16
				Topic related (Total)	7,63(*)	2,070	,007	1,38	13,89
			Topic related (2)	Homonyms	-3,80	2,536	,745	-11,46	3,86
				Synonyms	-3,10	2,536	,883	-10,76	4,56
				Antonyms	-4,20	2,536	,647	-11,86	3,46
				Topic related (1)	-8,30(*)	2,536	,025	-15,96	-,64
				Topic related (3)	-3,80	2,536	,745	-11,46	3,86
				Topic related (Total)	-,67	2,070	1,000	-6,92	5,59
			Topic related (3)	Homonyms	,00	2,536	1,000	-7,66	7,66
		Synonyms	,70	2,536	1,000	-6,96	8,36		
		Antonyms	-,40	2,536	1,000	-8,06	7,26		
		Topic related (1)	-4,50	2,536	,569	-12,16	3,16		
		Topic related (2)	3,80	2,536	,745	-3,86	11,46		
		Topic related (Total)	3,13	2,070	,736	-3,12	9,39		
	Topic related (Total)	Homonyms	-3,13	2,070	,736	-9,39	3,12		

Long term / Children	Homonyms	Synonyms	-2,43	2,070	,901	-8,69	3,82	
		Antonyms	-3,53	2,070	,614	-9,79	2,72	
		Topic related (1)	-7,63(*)	2,070	,007	-13,89	-1,38	
		Topic related (2)	,67	2,070	1,000	-5,59	6,92	
		Topic related (3)	-3,13	2,070	,736	-9,39	3,12	
		Synonyms	10,20(*)	2,927	,013	1,36	19,04	
		Antonyms	3,90	2,927	,835	-4,94	12,74	
		Topic related (1)	3,50	2,927	,894	-5,34	12,34	
		Topic related (2)	4,50	2,927	,722	-4,34	13,34	
		Topic related (3)	6,80	2,927	,246	-2,04	15,64	
		Topic related (Total)	4,93	2,390	,383	-2,29	12,15	
		Synonyms	Homonyms	-10,20(*)	2,927	,013	-19,04	-1,36
	Antonyms		-6,30	2,927	,333	-15,14	2,54	
	Topic related (1)		-6,70	2,927	,262	-15,54	2,14	
	Topic related (2)		-5,70	2,927	,456	-14,54	3,14	
	Topic related (3)		-3,40	2,927	,906	-12,24	5,44	
	Topic related (Total)		-5,27	2,390	,305	-12,49	1,95	
	Antonyms		Homonyms	-3,90	2,927	,835	-12,74	4,94
			Synonyms	6,30	2,927	,333	-2,54	15,14
			Topic related (1)	-,40	2,927	1,000	-9,24	8,44
			Topic related (2)	,60	2,927	1,000	-8,24	9,44
			Topic related (3)	2,90	2,927	,955	-5,94	11,74
			Topic related (Total)	1,03	2,390	,999	-6,19	8,25
		Topic related (1)	Homonyms	-3,50	2,927	,894	-12,34	5,34
			Synonyms	6,70	2,927	,262	-2,14	15,54
			Antonyms	,40	2,927	1,000	-8,44	9,24
			Topic related (2)	1,00	2,927	1,000	-7,84	9,84
			Topic related (3)	3,30	2,927	,918	-5,54	12,14
			Topic related (Total)	1,43	2,390	,997	-5,79	8,65
	Topic related (2)		Homonyms	-4,50	2,927	,722	-13,34	4,34
			Synonyms	5,70	2,927	,456	-3,14	14,54
			Antonyms	-,60	2,927	1,000	-9,44	8,24
			Topic related (1)	-1,00	2,927	1,000	-9,84	7,84
			Topic related (3)	2,30	2,927	,986	-6,54	11,14
			Topic related (Total)	,43	2,390	1,000	-6,79	7,65
		Topic related (3)	Homonyms	-6,80	2,927	,246	-15,64	2,04
			Synonyms	3,40	2,927	,906	-5,44	12,24
			Antonyms	-2,90	2,927	,955	-11,74	5,94
			Topic related (1)	-3,30	2,927	,918	-12,14	5,54
			Topic related (2)	-2,30	2,927	,986	-11,14	6,54
Topic related (Total)			-1,87	2,390	,986	-9,09	5,35	
Topic related (Total)	Homonyms		-4,93	2,390	,383	-12,15	2,29	
	Synonyms		5,27	2,390	,305	-1,95	12,49	
	Antonyms		-1,03	2,390	,999	-8,25	6,19	
	Topic related (1)		-1,43	2,390	,997	-8,65	5,79	
	Topic related (2)		-,43	2,390	1,000	-7,65	6,79	
	Topic related (3)		1,87	2,390	,986	-5,35	9,09	

\* The mean difference is significant at the .05 level.

**everyone****Descriptives <sup>1</sup>**

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Short term / Everyone	Homonyms	10	27,60	12,340	3,902	18,77	36,43	14	50
	Synonyms	10	14,50	5,503	1,740	10,56	18,44	6	22
	Antonyms	10	23,30	3,743	1,184	20,62	25,98	19	32
	Topic related (1)	10	28,60	11,481	3,631	20,39	36,81	16	54
	Topic related (2)	10	19,20	8,626	2,728	13,03	25,37	6	32
	Topic related (3)	10	18,10	10,311	3,261	10,72	25,48	9	45
	Topic related (Total)	30	21,97	10,953	2,000	17,88	26,06	6	54
	Total	90	21,91	10,396	1,096	19,73	24,09	6	54
Long term / Everyone	Homonyms	10	22,20	13,975	4,419	12,20	32,20	8	50
	Synonyms	10	11,30	4,762	1,506	7,89	14,71	5	17
	Antonyms	10	18,70	2,214	,700	17,12	20,28	16	23
	Topic related (1)	10	23,20	12,691	4,013	14,12	32,28	9	50
	Topic related (2)	10	13,90	8,621	2,726	7,73	20,07	3	28
	Topic related (3)	10	15,40	11,404	3,606	7,24	23,56	7	46
	Topic related (Total)	30	17,50	11,428	2,086	13,23	21,77	3	50
	Total	90	17,47	10,706	1,128	15,22	19,71	3	50

**Test of Homogeneity of Variances <sup>2</sup>**

	Levene Statistic	df1	df2	Sig.
Short term / Everyone	1,657	6	83	,142
Long term / Everyone	2,554	6	83	,026

**One-way ANOVA <sup>3</sup>**

		Sum of Squares	df	Mean Square	F	Sig.
Short term / Everyone	Between Groups	1558,422	6	259,737	2,674	,020
	Within Groups	8060,867	83	97,119		
	Total	9619,289	89			
Long term / Everyone	Between Groups	1118,200	6	186,367	1,703	,130
	Within Groups	9082,200	83	109,424		
	Total	10200,400	89			

Post Hoc Tests <sup>4</sup>

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) GROUP	(J) GROUP	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Short term / Everyone	Homonyms	Synonyms	13,10	4,407	,057	-,22	26,42
		Antonyms	4,30	4,407	,958	-9,02	17,62
		Topic related (1)	-1,00	4,407	1,000	-14,32	12,32
		Topic related (2)	8,40	4,407	,482	-4,92	21,72
		Topic related (3)	9,50	4,407	,331	-3,82	22,82
		Topic related (Total)	5,63	3,598	,704	-5,24	16,51
	Synonyms	Homonyms	-13,10	4,407	,057	-26,42	,22
		Antonyms	-8,80	4,407	,425	-22,12	4,52
		Topic related (1)	-14,10(*)	4,407	,031	-27,42	-,78
		Topic related (2)	-4,70	4,407	,936	-18,02	8,62
		Topic related (3)	-3,60	4,407	,983	-16,92	9,72
		Topic related (Total)	-7,47	3,598	,377	-18,34	3,41
	Antonyms	Homonyms	-4,30	4,407	,958	-17,62	9,02
		Synonyms	8,80	4,407	,425	-4,52	22,12
		Topic related (1)	-5,30	4,407	,891	-18,62	8,02
		Topic related (2)	4,10	4,407	,967	-9,22	17,42
		Topic related (3)	5,20	4,407	,900	-8,12	18,52
		Topic related (Total)	1,33	3,598	1,000	-9,54	12,21
	Topic related (1)	Homonyms	1,00	4,407	1,000	-12,32	14,32
		Synonyms	14,10(*)	4,407	,031	,78	27,42
		Antonyms	5,30	4,407	,891	-8,02	18,62
		Topic related (2)	9,40	4,407	,344	-3,92	22,72
		Topic related (3)	10,50	4,407	,219	-2,82	23,82
		Topic related (Total)	6,63	3,598	,523	-4,24	17,51
	Topic related (2)	Homonyms	-8,40	4,407	,482	-21,72	4,92
		Synonyms	4,70	4,407	,936	-8,62	18,02
		Antonyms	-4,10	4,407	,967	-17,42	9,22
		Topic related (1)	-9,40	4,407	,344	-22,72	3,92
		Topic related (3)	1,10	4,407	1,000	-12,22	14,42
		Topic related (Total)	-2,77	3,598	,987	-13,64	8,11
	Topic related (3)	Homonyms	-9,50	4,407	,331	-22,82	3,82
		Synonyms	3,60	4,407	,983	-9,72	16,92
		Antonyms	-5,20	4,407	,900	-18,52	8,12
		Topic related (1)	-10,50	4,407	,219	-23,82	2,82
		Topic related (2)	-1,10	4,407	1,000	-14,42	12,22
		Topic related (Total)	-3,87	3,598	,934	-14,74	7,01
	Topic related (Total)	Homonyms	-5,63	3,598	,704	-16,51	5,24
		Synonyms	7,47	3,598	,377	-3,41	18,34
		Antonyms	-1,33	3,598	1,000	-12,21	9,54
		Topic related (1)	-6,63	3,598	,523	-17,51	4,24

Long term / Everyone	Homonyms	Topic related (2)	2,77	3,598	,987	-8,11	13,64	
		Topic related (3)	3,87	3,598	,934	-7,01	14,74	
		Synonyms	10,90	4,678	,242	-3,24	25,04	
	Synonyms	Antonyms	3,50	4,678	,989	-10,64	17,64	
		Topic related (1)	-1,00	4,678	1,000	-15,14	13,14	
		Topic related (2)	8,30	4,678	,569	-5,84	22,44	
		Topic related (3)	6,80	4,678	,771	-7,34	20,94	
		Topic related (Total)	4,70	3,820	,880	-6,84	16,24	
		Homonyms	-10,90	4,678	,242	-25,04	3,24	
		Antonyms	-7,40	4,678	,694	-21,54	6,74	
		Topic related (1)	-11,90	4,678	,157	-26,04	2,24	
		Topic related (2)	-2,60	4,678	,998	-16,74	11,54	
		Topic related (3)	-4,10	4,678	,975	-18,24	10,04	
	Antonyms	Topic related (Total)	-6,20	3,820	,668	-17,74	5,34	
		Homonyms	-3,50	4,678	,989	-17,64	10,64	
		Synonyms	7,40	4,678	,694	-6,74	21,54	
		Topic related (1)	-4,50	4,678	,961	-18,64	9,64	
		Topic related (2)	4,80	4,678	,947	-9,34	18,94	
		Topic related (3)	3,30	4,678	,992	-10,84	17,44	
		Topic related (Total)	1,20	3,820	1,000	-10,34	12,74	
		Topic related (1)	Homonyms	1,00	4,678	1,000	-13,14	15,14
			Synonyms	11,90	4,678	,157	-2,24	26,04
			Antonyms	4,50	4,678	,961	-9,64	18,64
	Topic related (2)		9,30	4,678	,430	-4,84	23,44	
	Topic related (3)		7,80	4,678	,639	-6,34	21,94	
	Topic related (Total)		5,70	3,820	,749	-5,84	17,24	
	Topic related (2)		Homonyms	-8,30	4,678	,569	-22,44	5,84
			Synonyms	2,60	4,678	,998	-11,54	16,74
			Antonyms	-4,80	4,678	,947	-18,94	9,34
			Topic related (1)	-9,30	4,678	,430	-23,44	4,84
		Topic related (3)	-1,50	4,678	1,000	-15,64	12,64	
		Topic related (Total)	-3,60	3,820	,964	-15,14	7,94	
		Topic related (3)	Homonyms	-6,80	4,678	,771	-20,94	7,34
Synonyms			4,10	4,678	,975	-10,04	18,24	
Antonyms			-3,30	4,678	,992	-17,44	10,84	
Topic related (1)			-7,80	4,678	,639	-21,94	6,34	
Topic related (2)	1,50		4,678	1,000	-12,64	15,64		
Topic related (Total)	-2,10		3,820	,998	-13,64	9,44		
Topic related (Total)	Homonyms		-4,70	3,820	,880	-16,24	6,84	
	Synonyms		6,20	3,820	,668	-5,34	17,74	
	Antonyms		-1,20	3,820	1,000	-12,74	10,34	
	Topic related (1)		-5,70	3,820	,749	-17,24	5,84	
	Topic related (2)	3,60	3,820	,964	-7,94	15,14		
	Topic related (3)	2,10	3,820	,998	-9,44	13,64		

\* The mean difference is significant at the .05 level.

## NOTES

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1 This table displays descriptive statistics for each group and for the entire data set. N indicates the size of each group. The effects of unequal variances will be reduced if the group sizes are approximately equal. Mean shows the average values. One-way ANOVA compares these sample estimates to determine if the population means differ. The standard deviation indicates the amount of variability of the scores in each group. These values should be similar to each other for ANOVA to be appropriate. Equality can be inspected via the Levene test. The 95% confidence interval for the mean indicates the upper and lower bounds which contain the true value of the population mean 95% of the time.

2 One-way ANOVA assumes that the variances of the groups are all equal. This table displays the result of the Levene test for homogeneity of variances. The significance value exceeds .05, suggesting that the variances are equal and the assumption is justified.

3 The results of the analysis are presented in an One-way ANOVA table. The total variation is partitioned into two components. Between Groups represents variation of the group means around the overall mean. Within Groups represents variation of the individual scores around their respective group means. Sig indicates the significance level of the F-test. Small significance values (<.05) indicate group differences.

4 Post Hoc comparisons is used to determine which group(s) differ. This table lists the pairwise comparisons of the group means for all selected post hoc procedures. Mean difference lists the differences between the sample means. The table also presents the standard error for the pairwise comparisons. Sig lists the probability that the population mean difference is zero. A 95% confidence interval is constructed for each difference. If this interval contains zero, the two groups do not differ. The mean difference results marked with an asterisk (\*) indicate a statistical difference due to the significance being lower than 0,05. Conclusions are useful to be extracted only between compatible groups in term of Short and Long Term Test.

**Word frequency**

ADULTS

**Descriptives <sup>1</sup>**

data\_fre

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Frequent words / Related / Short term	16	15,31	6,194	1,548	12,01	18,61	6	27
Frequent words / Related / Long term	16	13,56	6,542	1,635	10,08	17,05	5	26
Not Frequent words / Related / Short term	44	11,27	4,223	,637	9,99	12,56	2	20
Not Frequent words / Related / Long term	44	9,07	4,332	,653	7,75	10,39	1	20
Frequent words / Unrelated / Short term	15	18,13	5,290	1,366	15,20	21,06	5	24
Frequent words / Unrelated / Long term	15	16,60	5,040	1,301	13,81	19,39	4	24
Not Frequent words / Unrelated / Short term	45	15,11	6,289	,938	13,22	17,00	4	28
Not Frequent words / Unrelated / Long term	45	13,09	5,325	,794	11,49	14,69	4	23
Total	240	13,11	5,863	,378	12,37	13,86	1	28

**Test of Homogeneity of Variances <sup>2</sup>**

data\_fre

Levene Statistic	df1	df2	Sig.
1,972	7	232	,060

**TWO-WAY ANOVA <sup>3</sup>**

data\_fre

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1689,643	7	241,378	8,581	,000
Within Groups	6526,320	232	28,131		
Total	8215,963	239			



Post Hoc Tests <sup>4</sup>

Multiple Comparisons

Dependent Variable: data\_fre  
 Tukey HSD

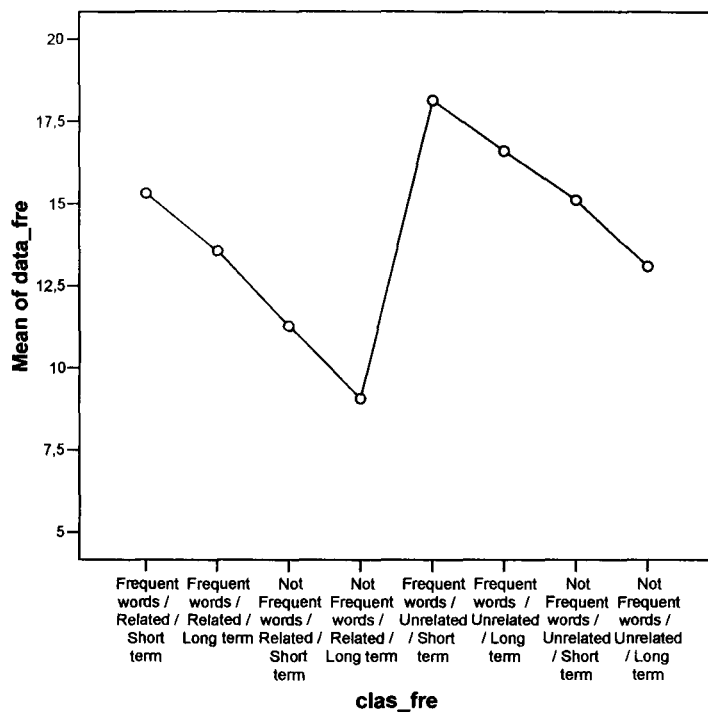
(I) clas_fre	(J) clas_fre	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Frequent words / Related / Short term	Frequent words / Related / Long term	1,750	1,875	,983	-3,99	7,49
	Not Frequent words / Related / Short term	4,040	1,548	,158	-,70	8,78
	Not Frequent words / Related / Long term	6,244(*)	1,548	,002	1,51	10,98
	Frequent words / Unrelated / Short term	-2,821	1,906	,818	-8,65	3,01
	Frequent words / Unrelated / Long term	-1,288	1,906	,998	-7,12	4,54
	Not Frequent words / Unrelated / Short term	,201	1,544	1,000	-4,52	4,92
	Not Frequent words / Unrelated / Long term	2,224	1,544	,837	-2,50	6,95
	Frequent words / Related / Long term	Frequent words / Related / Short term	-1,750	1,875	,983	-7,49
Not Frequent words / Related / Short term		2,290	1,548	,818	-2,45	7,03
Not Frequent words / Related / Long term		4,494	1,548	,077	-,24	9,23
Frequent words / Unrelated / Short term		-4,571	1,906	,247	-10,40	1,26
Frequent words / Unrelated / Long term		-3,038	1,906	,754	-8,87	2,79
Not Frequent words / Unrelated / Short term		-1,549	1,544	,974	-6,27	3,17
Not Frequent words / Unrelated / Long term		,474	1,544	1,000	-4,25	5,20
Not Frequent words / Related / Short term		Frequent words / Related / Short term	-4,040	1,548	,158	-8,78
	Frequent words / Related / Long term	-2,290	1,548	,818	-7,03	2,45
	Not Frequent words / Related / Long term	2,205	1,131	,518	-1,25	5,66
	Frequent words / Unrelated / Short term	-6,861(*)	1,586	,001	-11,71	-2,01
	Frequent words / Unrelated / Long term	-5,327(*)	1,586	,020	-10,18	-,48
	Not Frequent words / Unrelated / Short term	-3,838(*)	1,124	,017	-7,28	-,40
	Not Frequent words / Unrelated / Long term	-1,816	1,124	,741	-5,26	1,62
	Not Frequent words / Related / Long term	Frequent words / Related / Short term	-6,244(*)	1,548	,002	-10,98
Frequent words / Related / Long term		-4,494	1,548	,077	-9,23	,24

	Not Frequent words / Related / Short term	-2,205	1,131	,518	-5,66	1,25
	Frequent words / Unrelated / Short term	-9,065(*)	1,586	,000	-13,92	-4,21
	Frequent words / Unrelated / Long term	-7,532(*)	1,586	,000	-12,38	-2,68
	Not Frequent words / Unrelated / Short term	-6,043(*)	1,124	,000	-9,48	-2,60
	Not Frequent words / Unrelated / Long term	-4,021(*)	1,124	,010	-7,46	-,58
Frequent words / Unrelated / Short term	Frequent words / Related / Short term	2,821	1,906	,818	-3,01	8,65
	Frequent words / Related / Long term	4,571	1,906	,247	-1,26	10,40
	Not Frequent words / Related / Short term	6,861(*)	1,586	,001	2,01	11,71
	Not Frequent words / Related / Long term	9,065(*)	1,586	,000	4,21	13,92
	Frequent words / Unrelated / Long term	1,533	1,937	,993	-4,39	7,46
	Not Frequent words / Unrelated / Short term	3,022	1,581	,545	-1,81	7,86
	Not Frequent words / Unrelated / Long term	5,044(*)	1,581	,034	,21	9,88
Frequent words / Unrelated / Long term	Frequent words / Related / Short term	1,288	1,906	,998	-4,54	7,12
	Frequent words / Related / Long term	3,038	1,906	,754	-2,79	8,87
	Not Frequent words / Related / Short term	5,327(*)	1,586	,020	,48	10,18
	Not Frequent words / Related / Long term	7,532(*)	1,586	,000	2,68	12,38
	Frequent words / Unrelated / Short term	-1,533	1,937	,993	-7,46	4,39
	Not Frequent words / Unrelated / Short term	1,489	1,581	,982	-3,35	6,33
	Not Frequent words / Unrelated / Long term	3,511	1,581	,343	-1,33	8,35
Not Frequent words / Unrelated / Short term	Frequent words / Related / Short term	-,201	1,544	1,000	-4,92	4,52
	Frequent words / Related / Long term	1,549	1,544	,974	-3,17	6,27
	Not Frequent words / Related / Short term	3,838(*)	1,124	,017	,40	7,28
	Not Frequent words / Related / Long term	6,043(*)	1,124	,000	2,60	9,48
	Frequent words / Unrelated / Short term	-3,022	1,581	,545	-7,86	1,81
	Frequent words / Unrelated / Long term	-1,489	1,581	,982	-6,33	3,35
	Not Frequent words / Unrelated / Long term	2,022	1,118	,615	-1,40	5,44
Not Frequent words / Unrelated / Long term	Frequent words / Related / Short term	-2,224	1,544	,837	-6,95	2,50

Frequent words / Related / Long term	-,474	1,544	1,000	-5,20	4,25
Not Frequent words / Related / Short term	1,816	1,124	,741	-1,62	5,26
Not Frequent words / Related / Long term	4,021(*)	1,124	,010	,58	7,46
Frequent words / Unrelated / Short term	-5,044(*)	1,581	,034	-9,88	-,21
Frequent words / Unrelated / Long term	-3,511	1,581	,343	-8,35	1,33
Not Frequent words / Unrelated / Short term	-2,022	1,118	,615	-5,44	1,40

\* The mean difference is significant at the .05 level.

MEANS PLOT



**CHILDREN**

**Descriptives <sup>1</sup>**

data\_fre

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Frequent words / Related / Short term	16	12,56	9,187	2,297	7,67	17,46	0	29
Frequent words / Related / Long term	16	10,94	8,850	2,213	6,22	15,65	0	28
Not Frequent words / Related / Short term	44	8,43	6,128	,924	6,57	10,29	1	25
Not Frequent words / Related / Long term	44	5,82	5,550	,837	4,13	7,51	0	26
Frequent words / Unrelated / Short term	15	16,47	8,167	2,109	11,94	20,99	2	27
Frequent words / Unrelated / Long term	15	14,20	7,504	1,938	10,04	18,36	1	25
Not Frequent words / Unrelated / Short term	45	8,18	6,054	,902	6,36	10,00	1	21
Not Frequent words / Unrelated / Long term	45	6,24	5,175	,771	4,69	7,80	0	21
Total	240	8,80	7,151	,462	7,89	9,71	0	29

**Test of Homogeneity of Variances <sup>2</sup>**

data\_fre

Levene Statistic	df1	df2	Sig.
3,135	7	232	,003

**TWO-WAY ANOVA <sup>3</sup>**

data\_fre

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2327,162	7	332,452	7,796	,000
Within Groups	9893,238	232	42,643		
Total	12220,400	239			

Post Hoc Tests <sup>4</sup>  
 Multiple Comparisons

Dependent Variable: data\_fre  
 Tukey HSD

(I) clas_fre	(J) clas_fre	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Frequent words / Related / Short term	Frequent words / Related / Long term	1,625	2,309	,997	-5,44	8,69
	Not Frequent words / Related / Short term	4,131	1,906	,376	-1,70	9,96
	Not Frequent words / Related / Long term	6,744(*)	1,906	,011	,91	12,58
	Frequent words / Unrelated / Short term	-3,904	2,347	,711	-11,08	3,27
	Frequent words / Unrelated / Long term	-1,637	2,347	,997	-8,82	5,54
	Not Frequent words / Unrelated / Short term	4,385	1,901	,294	-1,43	10,20
	Not Frequent words / Unrelated / Long term	6,318(*)	1,901	,023	,50	12,13
	Frequent words / Related / Long term	Frequent words / Related / Short term	-1,625	2,309	,997	-8,69
Not Frequent words / Related / Short term		2,506	1,906	,893	-3,33	8,34
Not Frequent words / Related / Long term		5,119	1,906	,132	-,71	10,95
Frequent words / Unrelated / Short term		-5,529	2,347	,268	-12,71	1,65
Frequent words / Unrelated / Long term		-3,262	2,347	,861	-10,44	3,92
Not Frequent words / Unrelated / Short term		2,760	1,901	,832	-3,05	8,57
Not Frequent words / Unrelated / Long term		4,693	1,901	,214	-1,12	10,51
Not Frequent words / Related / Short term		Frequent words / Related / Short term	-4,131	1,906	,376	-9,96
	Frequent words / Related / Long term	-2,506	1,906	,893	-8,34	3,33
	Not Frequent words / Related / Long term	2,614	1,392	,568	-1,64	6,87
	Frequent words / Unrelated / Short term	-8,035(*)	1,952	,001	-14,01	-2,06
	Frequent words / Unrelated / Long term	-5,768	1,952	,067	-11,74	,20
	Not Frequent words / Unrelated / Short term	,254	1,384	1,000	-3,98	4,49
	Not Frequent words / Unrelated / Long term	2,187	1,384	,762	-2,05	6,42
	Not Frequent words / Related / Long term	Frequent words / Related / Short term	-6,744(*)	1,906	,011	-12,58
Frequent words / Related / Long term		-5,119	1,906	,132	-10,95	,71

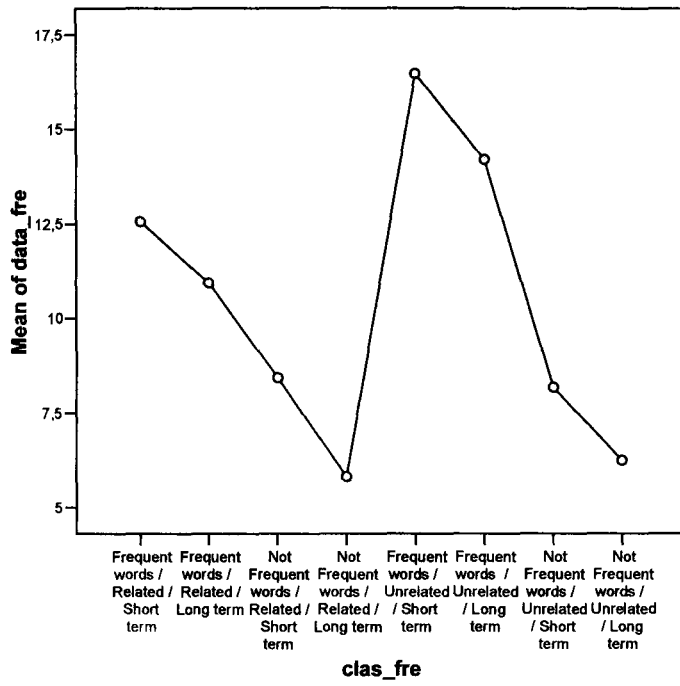
	Not Frequent words / Related / Short term	-2,614	1,392	,568	-6,87	1,64
	Frequent words / Unrelated / Short term	-10,648(*)	1,952	,000	-16,62	-4,68
	Frequent words / Unrelated / Long term	-8,382(*)	1,952	,001	-14,35	-2,41
	Not Frequent words / Unrelated / Short term	-2,360	1,384	,684	-6,59	1,88
	Not Frequent words / Unrelated / Long term	-,426	1,384	1,000	-4,66	3,81
Frequent words / Unrelated / Short term	Frequent words / Related / Short term	3,904	2,347	,711	-3,27	11,08
	Frequent words / Related / Long term	5,529	2,347	,268	-1,65	12,71
	Not Frequent words / Related / Short term	8,035(*)	1,952	,001	2,06	14,01
	Not Frequent words / Related / Long term	10,648(*)	1,952	,000	4,68	16,62
	Frequent words / Unrelated / Long term	2,267	2,384	,981	-5,03	9,56
	Not Frequent words / Unrelated / Short term	8,289(*)	1,947	,001	2,33	14,24
	Not Frequent words / Unrelated / Long term	10,222(*)	1,947	,000	4,27	16,18
Frequent words / Unrelated / Long term	Frequent words / Related / Short term	1,637	2,347	,997	-5,54	8,82
	Frequent words / Related / Long term	3,262	2,347	,861	-3,92	10,44
	Not Frequent words / Related / Short term	5,768	1,952	,067	-,20	11,74
	Not Frequent words / Related / Long term	8,382(*)	1,952	,001	2,41	14,35
	Frequent words / Unrelated / Short term	-2,267	2,384	,981	-9,56	5,03
	Not Frequent words / Unrelated / Short term	6,022(*)	1,947	,045	,07	11,98
	Not Frequent words / Unrelated / Long term	7,956(*)	1,947	,002	2,00	13,91
Not Frequent words / Unrelated / Short term	Frequent words / Related / Short term	-4,385	1,901	,294	-10,20	1,43
	Frequent words / Related / Long term	-2,760	1,901	,832	-8,57	3,05
	Not Frequent words / Related / Short term	-,254	1,384	1,000	-4,49	3,98
	Not Frequent words / Related / Long term	2,360	1,384	,684	-1,88	6,59
	Frequent words / Unrelated / Short term	-8,289(*)	1,947	,001	-14,24	-2,33
	Frequent words / Unrelated / Long term	-6,022(*)	1,947	,045	-11,98	-,07
	Not Frequent words / Unrelated / Long term	1,933	1,377	,855	-2,28	6,14
Not Frequent words / Unrelated / Long term	Frequent words / Related / Short term	-6,318(*)	1,901	,023	-12,13	-,50

**Appendix 24** ANOVA for test scores by word properties: Word Frequency, 315  
 Word Length, Word concreteness/abstractness

Frequent words / Related / Long term	-4,693	1,901	,214	-10,51	1,12
Not Frequent words / Related / Short term	-2,187	1,384	,762	-6,42	2,05
Not Frequent words / Related / Long term	,426	1,384	1,000	-3,81	4,66
Frequent words / Unrelated / Short term	-10,222(*)	1,947	,000	-16,18	-4,27
Frequent words / Unrelated / Long term	-7,956(*)	1,947	,002	-13,91	-2,00
Not Frequent words / Unrelated / Short term	-1,933	1,377	,855	-6,14	2,28

\* The mean difference is significant at the .05 level.

**MEANS PLOT**



**ALL TOGETHER**

**Descriptives <sup>1</sup>**

data fre

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Frequent words / Related / Short term	16	27,88	13,764	3,441	20,54	35,21	6	54
Frequent words / Related / Long term	16	24,50	13,609	3,402	17,25	31,75	5	50
Not Frequent words / Related / Short term	44	19,70	7,648	1,153	17,38	22,03	6	45
Not Frequent words / Related / Long term	44	14,89	7,701	1,161	12,54	17,23	3	46
Frequent words / Unrelated / Short term	15	34,60	12,052	3,112	27,93	41,27	12	49
Frequent words / Unrelated / Long term	15	30,80	10,805	2,790	24,82	36,78	9	44
Not Frequent words / Unrelated / Short term	45	23,29	8,604	1,283	20,70	25,87	7	42
Not Frequent words / Unrelated / Long term	45	19,33	7,087	1,056	17,20	21,46	8	33
Total	240	21,91	10,603	,684	20,56	23,26	3	54

**Test of Homogeneity of Variances <sup>2</sup>**

data fre

Levene Statistic	df1	df2	Sig.
5,407	7	232	,000

**TWO-WAY ANOVA <sup>3</sup>**

data fre

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7046,577	7	1006,654	11,783	,000
Within Groups	19820,585	232	85,434		
Total	26867,163	239			



Post Hoc Tests <sup>4</sup>

Multiple Comparisons

Dependent Variable: data\_fre  
 Tukey HSD

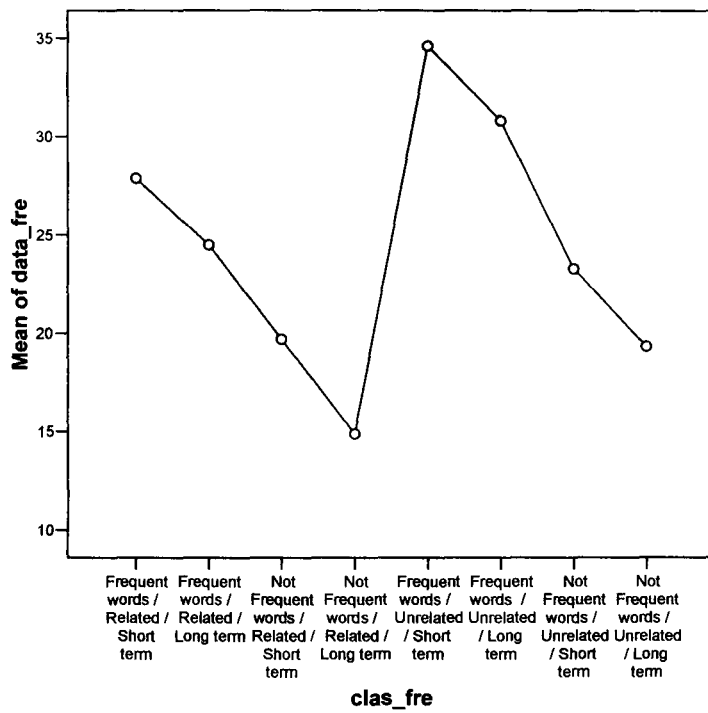
(I) clas_fre	(J) clas_fre	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
					Lower Bound	Upper Bound	
Frequent words / Related / Short term	Frequent words / Related / Long term	3,375	3,268	,969	-6,62	13,37	
	Not Frequent words / Related / Short term	8,170	2,698	,055	-,08	16,42	
	Not Frequent words / Related / Long term	12,989(*)	2,698	,000	4,73	21,24	
	Frequent words / Unrelated / Short term	-6,725	3,322	,468	-16,89	3,44	
	Frequent words / Unrelated / Long term	-2,925	3,322	,988	-13,09	7,24	
	Not Frequent words / Unrelated / Short term	4,586	2,690	,684	-3,64	12,82	
	Not Frequent words / Unrelated / Long term	8,542(*)	2,690	,036	,31	16,77	
	Frequent words / Related / Long term	Frequent words / Related / Short term	-3,375	3,268	,969	-13,37	6,62
Frequent words / Related / Long term	Not Frequent words / Related / Short term	4,795	2,698	,636	-3,46	13,05	
	Not Frequent words / Related / Long term	9,614(*)	2,698	,010	1,36	17,87	
	Frequent words / Unrelated / Short term	-10,100	3,322	,053	-20,26	,06	
	Frequent words / Unrelated / Long term	-6,300	3,322	,555	-16,46	3,86	
	Not Frequent words / Unrelated / Short term	1,211	2,690	1,000	-7,02	9,44	
	Not Frequent words / Unrelated / Long term	5,167	2,690	,538	-3,06	13,40	
	Not Frequent words / Related / Short term	Frequent words / Related / Short term	-8,170	2,698	,055	-16,42	,08
		Frequent words / Related / Long term	-4,795	2,698	,636	-13,05	3,46
Not Frequent words / Related / Long term		4,818	1,971	,225	-1,21	10,85	
Frequent words / Unrelated / Short term		-14,895(*)	2,764	,000	-23,35	-6,44	
Frequent words / Unrelated / Long term		-11,095(*)	2,764	,002	-19,55	-2,64	
Not Frequent words / Unrelated / Short term		-3,584	1,960	,601	-9,58	2,41	
Not Frequent words / Unrelated / Long term		,371	1,960	1,000	-5,62	6,37	
Not Frequent words / Related / Long term	Frequent words / Related / Short term	-12,989(*)	2,698	,000	-21,24	-4,73	

	Frequent words / Related / Long term	-9,614(*)	2,698	,010	-17,87	-1,36
	Not Frequent words / Related / Short term	-4,818	1,971	,225	-10,85	1,21
	Frequent words / Unrelated / Short term	-19,714(*)	2,764	,000	-28,17	-11,26
	Frequent words / Unrelated / Long term	-15,914(*)	2,764	,000	-24,37	-7,46
	Not Frequent words / Unrelated / Short term	-8,403(*)	1,960	,001	-14,40	-2,41
	Not Frequent words / Unrelated / Long term	-4,447	1,960	,315	-10,44	1,55
Frequent words / Unrelated / Short term	Frequent words / Related / Short term	6,725	3,322	,468	-3,44	16,89
	Frequent words / Related / Long term	10,100	3,322	,053	-,06	20,26
	Not Frequent words / Related / Short term	14,895(*)	2,764	,000	6,44	23,35
	Not Frequent words / Related / Long term	19,714(*)	2,764	,000	11,26	28,17
	Frequent words / Unrelated / Long term	3,800	3,375	,951	-6,52	14,12
	Not Frequent words / Unrelated / Short term	11,311(*)	2,756	,001	2,88	19,74
	Not Frequent words / Unrelated / Long term	15,267(*)	2,756	,000	6,84	23,70
Frequent words / Unrelated / Long term	Frequent words / Related / Short term	2,925	3,322	,988	-7,24	13,09
	Frequent words / Related / Long term	6,300	3,322	,555	-3,86	16,46
	Not Frequent words / Related / Short term	11,095(*)	2,764	,002	2,64	19,55
	Not Frequent words / Related / Long term	15,914(*)	2,764	,000	7,46	24,37
	Frequent words / Unrelated / Short term	-3,800	3,375	,951	-14,12	6,52
	Not Frequent words / Unrelated / Short term	7,511	2,756	,120	-,92	15,94
	Not Frequent words / Unrelated / Long term	11,467(*)	2,756	,001	3,04	19,90
Not Frequent words / Unrelated / Short term	Frequent words / Related / Short term	-4,586	2,690	,684	-12,82	3,64
	Frequent words / Related / Long term	-1,211	2,690	1,000	-9,44	7,02
	Not Frequent words / Related / Short term	3,584	1,960	,601	-2,41	9,58
	Not Frequent words / Related / Long term	8,403(*)	1,960	,001	2,41	14,40
	Frequent words / Unrelated / Short term	-11,311(*)	2,756	,001	-19,74	-2,88
	Frequent words / Unrelated / Long term	-7,511	2,756	,120	-15,94	,92
	Not Frequent words / Unrelated / Long term	3,956	1,949	,464	-2,00	9,92

Not Frequent words / Unrelated / Long term	Frequent words / Related / Short term	-8,542(*)	2,690	,036	-16,77	-,31
	Frequent words / Related / Long term	-5,167	2,690	,538	-13,40	3,06
	Not Frequent words / Related / Short term	-,371	1,960	1,000	-6,37	5,62
	Not Frequent words / Related / Long term	4,447	1,960	,315	-1,55	10,44
	Frequent words / Unrelated / Short term	-15,267(*)	2,756	,000	-23,70	-6,84
	Frequent words / Unrelated / Long term	-11,467(*)	2,756	,001	-19,90	-3,04
	Not Frequent words / Unrelated / Short term	-3,956	1,949	,464	-9,92	2,00

\* The mean difference is significant at the .05 level.

MEANS PLOT



**Word length**

ADULTS

**Descriptives <sup>1</sup>**

data sho

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Short words / Related / Short term	29	11,55	4,903	,911	9,69	13,42	5	22
Short words / Related / Long term	29	9,34	5,246	,974	7,35	11,34	1	23
Long words / Related / Short term	31	13,10	5,243	,942	11,17	15,02	2	27
Long words / Related / Long term	31	11,13	5,377	,966	9,16	13,10	1	26
Short words / Unrelated / Short term	28	15,04	5,568	1,052	12,88	17,19	4	24
Short words / Unrelated / Long term	28	12,82	4,563	,862	11,05	14,59	5	21
Long words / Unrelated / Short term	32	16,59	6,628	1,172	14,20	18,98	4	28
Long words / Unrelated / Long term	32	14,97	5,986	1,058	12,81	17,13	4	24
Total	240	13,11	5,863	,378	12,37	13,86	1	28

**Test of Homogeneity of Variances <sup>2</sup>**

data sho

Levene Statistic	df1	df2	Sig.
1,362	7	232	,222

**TWO-WAY ANOVA <sup>3</sup>**

data sho

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1208,286	7	172,612	5,715	,000
Within Groups	7007,677	232	30,206		
Total	8215,963	239			

Post Hoc Tests <sup>4</sup>

Multiple Comparisons

Dependent Variable: data\_sho  
 Tukey HSD

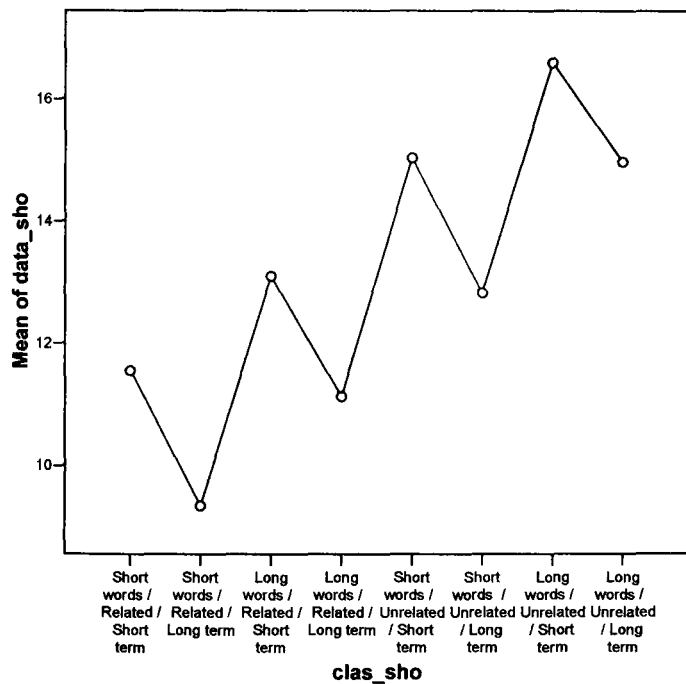
(I) clas_sho	(J) clas_sho	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Short words / Related / Short term	Short words / Related / Long term	2,207	1,443	,791	-2,21	6,62
	Long words / Related / Short term	-1,545	1,420	,959	-5,89	2,80
	Long words / Related / Long term	,423	1,420	1,000	-3,92	4,77
	Short words / Unrelated / Short term	-3,484	1,456	,250	-7,94	,97
	Short words / Unrelated / Long term	-1,270	1,456	,988	-5,72	3,18
	Long words / Unrelated / Short term	-5,042(*)	1,409	,010	-9,35	-,73
	Long words / Unrelated / Long term	-3,417	1,409	,234	-7,73	,89
	Short words / Related / Long term	Short words / Related / Short term	-2,207	1,443	,791	-6,62
Long words / Related / Short term		-3,752	1,420	,146	-8,09	,59
Long words / Related / Long term		-1,784	1,420	,914	-6,13	2,56
Short words / Unrelated / Short term		-5,691(*)	1,456	,003	-10,14	-1,24
Short words / Unrelated / Long term		-3,477	1,456	,252	-7,93	,98
Long words / Unrelated / Short term		-7,249(*)	1,409	,000	-11,56	-2,94
Long words / Unrelated / Long term		-5,624(*)	1,409	,002	-9,93	-1,31
Long words / Related / Short term		Short words / Related / Short term	1,545	1,420	,959	-2,80
	Short words / Related / Long term	3,752	1,420	,146	-,59	8,09
	Long words / Related / Long term	1,968	1,396	,852	-2,30	6,24
	Short words / Unrelated / Short term	-1,939	1,433	,877	-6,32	2,44
	Short words / Unrelated / Long term	,275	1,433	1,000	-4,11	4,66
	Long words / Unrelated / Short term	-3,497	1,385	,190	-7,73	,74
	Long words / Unrelated / Long term	-1,872	1,385	,878	-6,11	2,36

Long words / Related / Long term	Short words / Related / Short term	-,423	1,420	1,000	-4,77	3,92
	Short words / Related / Long term	1,784	1,420	,914	-2,56	6,13
	Long words / Related / Short term	-1,968	1,396	,852	-6,24	2,30
	Short words / Unrelated / Short term	-3,907	1,433	,120	-8,29	,48
	Short words / Unrelated / Long term	-1,692	1,433	,937	-6,08	2,69
	Long words / Unrelated / Short term	-5,465(*)	1,385	,003	-9,70	-1,23
	Long words / Unrelated / Long term	-3,840	1,385	,107	-8,08	,40
Short words / Unrelated / Short term	Short words / Related / Short term	3,484	1,456	,250	-,97	7,94
	Short words / Related / Long term	5,691(*)	1,456	,003	1,24	10,14
	Long words / Related / Short term	1,939	1,433	,877	-2,44	6,32
	Long words / Related / Long term	3,907	1,433	,120	-,48	8,29
	Short words / Unrelated / Long term	2,214	1,469	,803	-2,28	6,71
	Long words / Unrelated / Short term	-1,558	1,422	,957	-5,91	2,79
	Long words / Unrelated / Long term	,067	1,422	1,000	-4,28	4,42
Short words / Unrelated / Long term	Short words / Related / Short term	1,270	1,456	,988	-3,18	5,72
	Short words / Related / Long term	3,477	1,456	,252	-,98	7,93
	Long words / Related / Short term	-,275	1,433	1,000	-4,66	4,11
	Long words / Related / Long term	1,692	1,433	,937	-2,69	6,08
	Short words / Unrelated / Short term	-2,214	1,469	,803	-6,71	2,28
	Long words / Unrelated / Short term	-3,772	1,422	,143	-8,12	,58
	Long words / Unrelated / Long term	-2,147	1,422	,802	-6,50	2,20
Long words / Unrelated / Short term	Short words / Related / Short term	5,042(*)	1,409	,010	,73	9,35
	Short words / Related / Long term	7,249(*)	1,409	,000	2,94	11,56
	Long words / Related / Short term	3,497	1,385	,190	-,74	7,73
	Long words / Related / Long term	5,465(*)	1,385	,003	1,23	9,70
	Short words / Unrelated / Short term	1,558	1,422	,957	-2,79	5,91

	Short words / Unrelated / Long term	3,772	1,422	,143	-,58	8,12
	Long words / Unrelated / Long term	1,625	1,374	,936	-2,58	5,83
Long words / Unrelated / Long term	Short words / Related / Short term	3,417	1,409	,234	-,89	7,73
	Short words / Related / Long term	5,624(*)	1,409	,002	1,31	9,93
	Long words / Related / Short term	1,872	1,385	,878	-2,36	6,11
	Long words / Related / Long term	3,840	1,385	,107	-,40	8,08
	Short words / Unrelated / Short term	-,067	1,422	1,000	-4,42	4,28
	Short words / Unrelated / Long term	2,147	1,422	,802	-2,20	6,50
	Long words / Unrelated / Short term	-1,625	1,374	,936	-5,83	2,58

\* The mean difference is significant at the .05 level.

#### MEANS PLOT



**CHILDREN**

**Descriptives <sup>1</sup>**

data sho

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Short words / Related / Short term	29	10,21	8,478	1,574	6,98	13,43	0	29
Short words / Related / Long term	29	8,14	8,154	1,514	5,04	11,24	0	28
Long words / Related / Short term	31	8,90	5,896	1,059	6,74	11,07	0	27
Long words / Related / Long term	31	6,29	5,460	,981	4,29	8,29	0	24
Short words / Unrelated / Short term	28	9,89	6,356	1,201	7,43	12,36	2	23
Short words / Unrelated / Long term	28	8,36	6,026	1,139	6,02	10,69	0	21
Long words / Unrelated / Short term	32	10,56	8,466	1,497	7,51	13,61	1	27
Long words / Unrelated / Long term	32	8,13	7,400	1,308	5,46	10,79	1	25
Total	240	8,80	7,151	,462	7,89	9,71	0	29

**Test of Homogeneity of Variances <sup>2</sup>**

data sho

Levene Statistic	df1	df2	Sig.
2,150	7	232	,039

**TWO-WAY ANOVA <sup>3</sup>**

data sho

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	418,614	7	59,802	1,176	,318
Within Groups	11801,786	232	50,870		
Total	12220,400	239			



Post Hoc Tests <sup>4</sup>

Multiple Comparisons

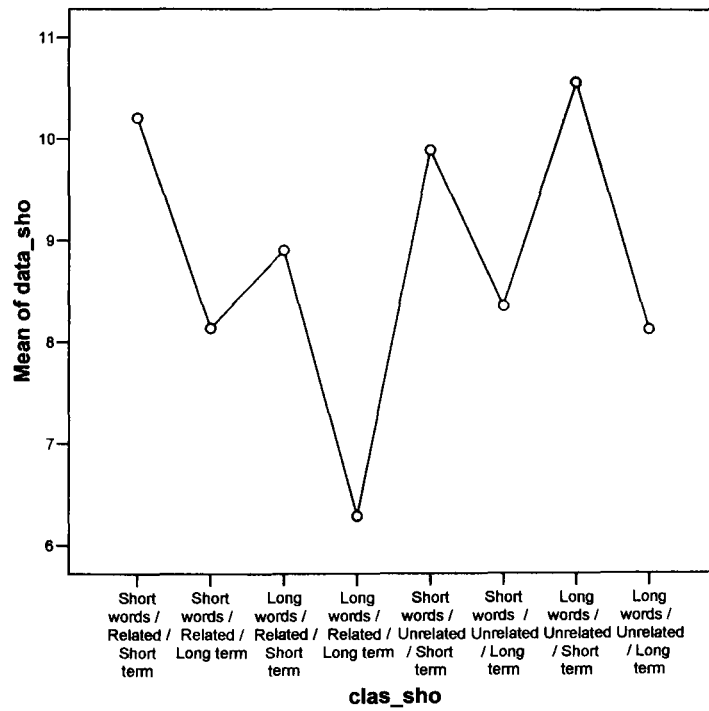
Dependent Variable: data\_sho  
 Tukey HSD

(I) clas_sho	(J) clas_sho	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Short words / Related / Short term	Short words / Related / Long term	2,069	1,873	,955	-3,66	7,80
	Long words / Related / Short term	1,304	1,843	,997	-4,33	6,94
	Long words / Related / Long term	3,917	1,843	,402	-1,72	9,55
	Short words / Unrelated / Short term	,314	1,890	1,000	-5,47	6,09
	Short words / Unrelated / Long term	1,850	1,890	,977	-3,93	7,63
	Long words / Unrelated / Short term	-,356	1,829	1,000	-5,95	5,24
	Long words / Unrelated / Long term	2,082	1,829	,948	-3,51	7,68
	Short words / Related / Long term	Short words / Related / Short term	-2,069	1,873	,955	-7,80
Long words / Related / Short term		-,765	1,843	1,000	-6,40	4,87
Long words / Related / Long term		1,848	1,843	,974	-3,79	7,48
Short words / Unrelated / Short term		-1,755	1,890	,983	-7,54	4,03
Short words / Unrelated / Long term		-,219	1,890	1,000	-6,00	5,56
Long words / Unrelated / Short term		-2,425	1,829	,888	-8,02	3,17
Long words / Unrelated / Long term		,013	1,829	1,000	-5,58	5,61
Long words / Related / Short term		Short words / Related / Short term	-1,304	1,843	,997	-6,94
	Short words / Related / Long term	,765	1,843	1,000	-4,87	6,40
	Long words / Related / Long term	2,613	1,812	,837	-2,93	8,15
	Short words / Unrelated / Short term	-,990	1,859	,999	-6,68	4,70
	Short words / Unrelated / Long term	,546	1,859	1,000	-5,14	6,23
	Long words / Unrelated / Short term	-1,659	1,797	,984	-7,16	3,84
	Long words / Unrelated / Long term	,778	1,797	1,000	-4,72	6,28

Long words / Related / Long term	Short words / Related / Short term	-3,917	1,843	,402	-9,55	1,72	
	Short words / Related / Long term	-1,848	1,843	,974	-7,48	3,79	
	Long words / Related / Short term	-2,613	1,812	,837	-8,15	2,93	
	Short words / Unrelated / Short term	-3,603	1,859	,527	-9,29	2,09	
	Short words / Unrelated / Long term	-2,067	1,859	,954	-7,75	3,62	
	Long words / Unrelated / Short term	-4,272	1,797	,258	-9,77	1,23	
	Long words / Unrelated / Long term	-1,835	1,797	,971	-7,33	3,66	
	Short words / Unrelated / Short term	Short words / Related / Short term	-,314	1,890	1,000	-6,09	5,47
		Short words / Related / Long term	1,755	1,890	,983	-4,03	7,54
		Long words / Related / Short term	,990	1,859	,999	-4,70	6,68
Long words / Related / Long term		3,603	1,859	,527	-2,09	9,29	
Short words / Unrelated / Long term		1,536	1,906	,993	-4,29	7,37	
Long words / Unrelated / Short term		-,670	1,846	1,000	-6,32	4,98	
Long words / Unrelated / Long term		1,768	1,846	,980	-3,88	7,41	
Short words / Unrelated / Long term		Short words / Related / Short term	-1,850	1,890	,977	-7,63	3,93
		Short words / Related / Long term	,219	1,890	1,000	-5,56	6,00
		Long words / Related / Short term	-,546	1,859	1,000	-6,23	5,14
	Long words / Related / Long term	2,067	1,859	,954	-3,62	7,75	
	Short words / Unrelated / Short term	-1,536	1,906	,993	-7,37	4,29	
	Long words / Unrelated / Short term	-2,205	1,846	,933	-7,85	3,44	
	Long words / Unrelated / Long term	,232	1,846	1,000	-5,41	5,88	
	Long words / Unrelated / Short term	Short words / Related / Short term	,356	1,829	1,000	-5,24	5,95
		Short words / Related / Long term	2,425	1,829	,888	-3,17	8,02
		Long words / Related / Short term	1,659	1,797	,984	-3,84	7,16
Long words / Related / Long term		4,272	1,797	,258	-1,23	9,77	
Short words / Unrelated / Short term		,670	1,846	1,000	-4,98	6,32	

	Short words / Unrelated / Long term	2,205	1,846	,933	-3,44	7,85
	Long words / Unrelated / Long term	2,438	1,783	,871	-3,02	7,89
Long words / Unrelated / Long term	Short words / Related / Short term	-2,082	1,829	,948	-7,68	3,51
	Short words / Related / Long term	-,013	1,829	1,000	-5,61	5,58
	Long words / Related / Short term	-,778	1,797	1,000	-6,28	4,72
	Long words / Related / Long term	1,835	1,797	,971	-3,66	7,33
	Short words / Unrelated / Short term	-1,768	1,846	,980	-7,41	3,88
	Short words / Unrelated / Long term	-,232	1,846	1,000	-5,88	5,41
	Long words / Unrelated / Short term	-2,438	1,783	,871	-7,89	3,02

**MEANS PLOT**



**ALL TOGETHER**

**Descriptives <sup>1</sup>**

data sho

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Short words / Related / Short term	29	21,76	11,047	2,051	17,56	25,96	6	50
Short words / Related / Long term	29	17,48	11,319	2,102	13,18	21,79	4	50
Long words / Related / Short term	31	22,00	9,525	1,711	18,51	25,49	6	54
Long words / Related / Long term	31	17,42	9,705	1,743	13,86	20,98	3	50
Short words / Unrelated / Short term	28	24,93	8,602	1,626	21,59	28,26	11	41
Short words / Unrelated / Long term	28	21,18	7,775	1,469	18,16	24,19	8	36
Long words / Unrelated / Short term	32	27,16	12,258	2,167	22,74	31,58	7	49
Long words / Unrelated / Long term	32	23,09	10,831	1,915	19,19	27,00	9	44
Total	240	21,91	10,603	,684	20,56	23,26	3	54

**Test of Homogeneity of Variances <sup>2</sup>**

data sho

Levene Statistic	df1	df2	Sig.
1,637	7	232	,126

**TWO-WAY ANOVA <sup>3</sup>**

data sho

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2390,161	7	341,452	3,236	,003
Within Groups	24477,002	232	105,504		
Total	26867,163	239			

Post Hoc Tests <sup>4</sup>

Multiple Comparisons

Dependent Variable: data\_sho  
 Tukey HSD

(I) clas_sho	(J) clas_sho	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Short words / Related / Short term	Short words / Related / Long term	4,276	2,697	,759	-3,98	12,53
	Long words / Related / Short term	-,241	2,654	1,000	-8,36	7,88
	Long words / Related / Long term	4,339	2,654	,728	-3,78	12,46
	Short words / Unrelated / Short term	-3,170	2,721	,941	-11,49	5,15
	Short words / Unrelated / Long term	,580	2,721	1,000	-7,74	8,90
	Long words / Unrelated / Short term	-5,398	2,633	,451	-13,45	2,66
	Long words / Unrelated / Long term	-1,335	2,633	1,000	-9,39	6,72
	Short words / Related / Long term	Short words / Related / Short term	-4,276	2,697	,759	-12,53
Long words / Related / Short term		-4,517	2,654	,686	-12,63	3,60
Long words / Related / Long term		,063	2,654	1,000	-8,05	8,18
Short words / Unrelated / Short term		-7,446	2,721	,117	-15,77	,88
Short words / Unrelated / Long term		-3,696	2,721	,875	-12,02	4,63
Long words / Unrelated / Short term		-9,673(*)	2,633	,007	-17,73	-1,62
Long words / Unrelated / Long term		-5,611	2,633	,398	-13,67	2,44
Long words / Related / Short term		Short words / Related / Short term	,241	2,654	1,000	-7,88
	Short words / Related / Long term	4,517	2,654	,686	-3,60	12,63
	Long words / Related / Long term	4,581	2,609	,651	-3,40	12,56
	Short words / Unrelated / Short term	-2,929	2,678	,958	-11,12	5,26
	Short words / Unrelated / Long term	,821	2,678	1,000	-7,37	9,01
	Long words / Unrelated / Short term	-5,156	2,589	,490	-13,07	2,76
	Long words / Unrelated / Long term	-1,094	2,589	1,000	-9,01	6,82

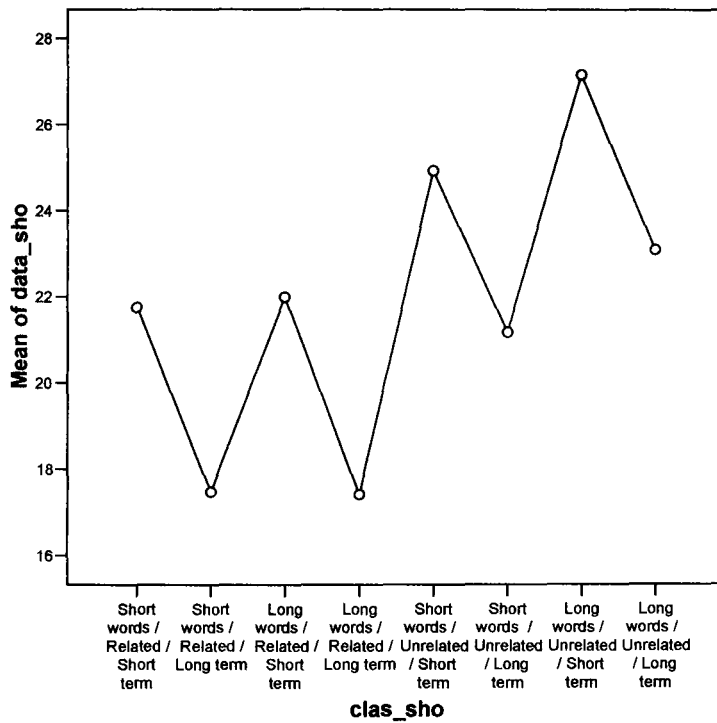
**Appendix 24** ANOVA for test scores by word properties: Word Frequency, 330  
 Word Length, Word concreteness/abstractness

Long words / Related / Long term	Short words / Related / Short term	-4,339	2,654	,728	-12,46	3,78	
	Short words / Related / Long term	-,063	2,654	1,000	-8,18	8,05	
	Long words / Related / Short term	-4,581	2,609	,651	-12,56	3,40	
	Short words / Unrelated / Short term	-7,509	2,678	,099	-15,70	,68	
	Short words / Unrelated / Long term	-3,759	2,678	,855	-11,95	4,43	
	Long words / Unrelated / Short term	-9,737(*)	2,589	,005	-17,65	-1,82	
	Long words / Unrelated / Long term	-5,674	2,589	,360	-13,59	2,24	
	Short words / Unrelated / Short term	Short words / Related / Short term	3,170	2,721	,941	-5,15	11,49
		Short words / Related / Long term	7,446	2,721	,117	-,88	15,77
		Long words / Related / Short term	2,929	2,678	,958	-5,26	11,12
Long words / Related / Long term		7,509	2,678	,099	-,68	15,70	
Short words / Unrelated / Long term		3,750	2,745	,872	-4,65	12,15	
Long words / Unrelated / Short term		-2,228	2,658	,991	-10,36	5,90	
Long words / Unrelated / Long term		1,835	2,658	,997	-6,30	9,97	
Short words / Unrelated / Long term		Short words / Related / Short term	-,580	2,721	1,000	-8,90	7,74
		Short words / Related / Long term	3,696	2,721	,875	-4,63	12,02
		Long words / Related / Short term	-,821	2,678	1,000	-9,01	7,37
	Long words / Related / Long term	3,759	2,678	,855	-4,43	11,95	
	Short words / Unrelated / Short term	-3,750	2,745	,872	-12,15	4,65	
	Long words / Unrelated / Short term	-5,978	2,658	,327	-14,11	2,15	
	Long words / Unrelated / Long term	-1,915	2,658	,996	-10,05	6,22	
	Long words / Unrelated / Short term	Short words / Related / Short term	5,398	2,633	,451	-2,66	13,45
		Short words / Related / Long term	9,673(*)	2,633	,007	1,62	17,73
		Long words / Related / Short term	5,156	2,589	,490	-2,76	13,07
Long words / Related / Long term		9,737(*)	2,589	,005	1,82	17,65	
Short words / Unrelated / Short term		2,228	2,658	,991	-5,90	10,36	

	Short words / Unrelated / Long term	5,978	2,658	,327	-2,15	14,11
	Long words / Unrelated / Long term	4,063	2,568	,761	-3,79	11,92
Long words / Unrelated / Long term	Short words / Related / Short term	1,335	2,633	1,000	-6,72	9,39
	Short words / Related / Long term	5,611	2,633	,398	-2,44	13,67
	Long words / Related / Short term	1,094	2,589	1,000	-6,82	9,01
	Long words / Related / Long term	5,674	2,589	,360	-2,24	13,59
	Short words / Unrelated / Short term	-1,835	2,658	,997	-9,97	6,30
	Short words / Unrelated / Long term	1,915	2,658	,996	-6,22	10,05
	Long words / Unrelated / Short term	-4,063	2,568	,761	-11,92	3,79

\* The mean difference is significant at the .05 level.

MEANS PLOT



**Word concreteness/abstractness**

ADULTS

Descriptives <sup>1</sup>

data con

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Concrete words / Related / Short term	29	10,97	5,186	,963	8,99	12,94	2	27
Concrete words / Related / Long term	29	8,55	5,402	1,003	6,50	10,61	1	26
Abstract words / Related / Short term	31	13,65	4,737	,851	11,91	15,38	4	25
Abstract words / Related / Long term	31	11,87	4,842	,870	10,09	13,65	4	23
Concrete words / Unrelated / Short term	32	13,94	5,483	,969	11,96	15,91	4	24
Concrete words / Unrelated / Long term	32	12,03	4,707	,832	10,33	13,73	4	20
Abstract words / Unrelated / Short term	28	18,07	6,230	1,177	15,66	20,49	5	28
Abstract words / Unrelated / Long term	28	16,18	5,437	1,027	14,07	18,29	6	24
Total	240	13,11	5,863	,378	12,37	13,86	1	28

Test of Homogeneity of Variances <sup>2</sup>

data con

Levene Statistic	df1	df2	Sig.
,890	7	232	,515

TWO-WAY ANOVA <sup>3</sup>

data con

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1804,436	7	257,777	9,328	,000
Within Groups	6411,527	232	27,636		
Total	8215,963	239			



Post Hoc Tests <sup>4</sup>

Multiple Comparisons

Dependent Variable: data\_con  
 Tukey HSD

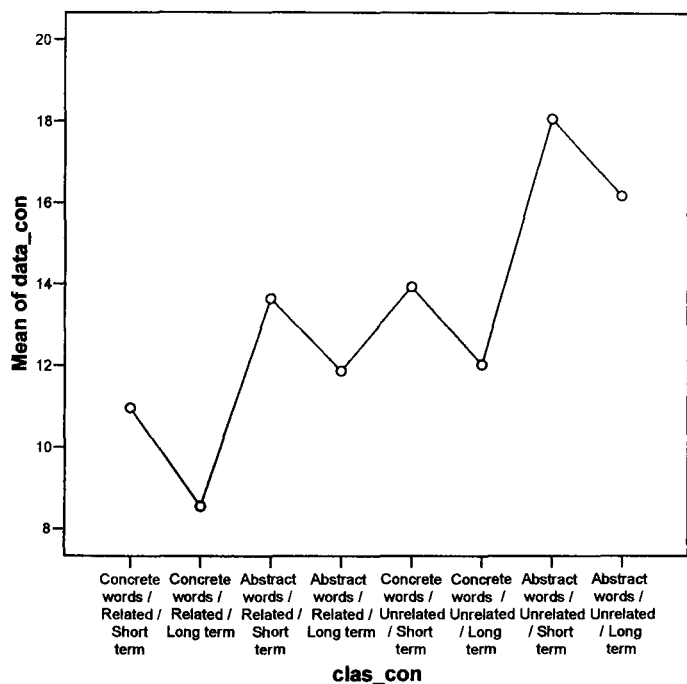
(I) clas_con	(J) clas_con	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Concrete words / Related / Short term	Concrete words / Related / Long term	2,414	1,381	,655	-1,81	6,64
	Abstract words / Related / Short term	-2,680	1,358	,502	-6,83	1,47
	Abstract words / Related / Long term	-,905	1,358	,998	-5,06	3,25
	Concrete words / Unrelated / Short term	-2,972	1,348	,353	-7,09	1,15
	Concrete words / Unrelated / Long term	-1,066	1,348	,993	-5,19	3,06
	Abstract words / Unrelated / Short term	-7,106(*)	1,393	,000	-11,37	-2,85
	Abstract words / Unrelated / Long term	-5,213(*)	1,393	,006	-9,47	-,95
	Concrete words / Related / Long term	Concrete words / Related / Short term	-2,414	1,381	,655	-6,64
Abstract words / Related / Short term		-5,093(*)	1,358	,005	-9,25	-,94
Abstract words / Related / Long term		-3,319	1,358	,225	-7,47	,83
Concrete words / Unrelated / Short term		-5,386(*)	1,348	,002	-9,51	-1,26
Concrete words / Unrelated / Long term		-3,480	1,348	,168	-7,60	,64
Abstract words / Unrelated / Short term		-9,520(*)	1,393	,000	-13,78	-5,26
Abstract words / Unrelated / Long term		-7,627(*)	1,393	,000	-11,89	-3,37
Abstract words / Related / Short term		Concrete words / Related / Short term	2,680	1,358	,502	-1,47
	Concrete words / Related / Long term	5,093(*)	1,358	,005	,94	9,25
	Abstract words / Related / Long term	1,774	1,335	,887	-2,31	5,86
	Concrete words / Unrelated / Short term	-,292	1,325	1,000	-4,34	3,76
	Concrete words / Unrelated / Long term	1,614	1,325	,926	-2,44	5,67
	Abstract words / Unrelated / Short term	-4,426(*)	1,371	,030	-8,62	-,23
	Abstract words / Unrelated / Long term	-2,533	1,371	,588	-6,73	1,66
	Abstract words / Related / Long term	Concrete words / Related / Short term	,905	1,358	,998	-3,25

	Concrete words / Related / Long term	3,319	1,358	,225	-.83	7,47
	Abstract words / Related / Short term	-1,774	1,335	,887	-5,86	2,31
	Concrete words / Unrelated / Short term	-2,067	1,325	,774	-6,12	1,99
	Concrete words / Unrelated / Long term	-,160	1,325	1,000	-4,21	3,89
	Abstract words / Unrelated / Short term	-6,200(*)	1,371	,000	-10,39	-2,01
	Abstract words / Unrelated / Long term	-4,308(*)	1,371	,039	-8,50	-,12
Concrete words / Unrelated / Short term	Concrete words / Related / Short term	2,972	1,348	,353	-1,15	7,09
	Concrete words / Related / Long term	5,386(*)	1,348	,002	1,26	9,51
	Abstract words / Related / Short term	,292	1,325	1,000	-3,76	4,34
	Abstract words / Related / Long term	2,067	1,325	,774	-1,99	6,12
	Concrete words / Unrelated / Long term	1,906	1,314	,832	-2,11	5,93
	Abstract words / Unrelated / Short term	-4,134	1,360	,053	-8,30	,03
	Abstract words / Unrelated / Long term	-2,241	1,360	,721	-6,40	1,92
Concrete words / Unrelated / Long term	Concrete words / Related / Short term	1,066	1,348	,993	-3,06	5,19
	Concrete words / Related / Long term	3,480	1,348	,168	-.64	7,60
	Abstract words / Related / Short term	-1,614	1,325	,926	-5,67	2,44
	Abstract words / Related / Long term	,160	1,325	1,000	-3,89	4,21
	Concrete words / Unrelated / Short term	-1,906	1,314	,832	-5,93	2,11
	Abstract words / Unrelated / Short term	-6,040(*)	1,360	,000	-10,20	-1,88
	Abstract words / Unrelated / Long term	-4,147	1,360	,051	-8,31	,01
Abstract words / Unrelated / Short term	Concrete words / Related / Short term	7,106(*)	1,393	,000	2,85	11,37
	Concrete words / Related / Long term	9,520(*)	1,393	,000	5,26	13,78
	Abstract words / Related / Short term	4,426(*)	1,371	,030	,23	8,62
	Abstract words / Related / Long term	6,200(*)	1,371	,000	2,01	10,39
	Concrete words / Unrelated / Short term	4,134	1,360	,053	-.03	8,30
	Concrete words / Unrelated / Long term	6,040(*)	1,360	,000	1,88	10,20
	Abstract words / Unrelated / Long term	1,893	1,405	,880	-2,40	6,19

Abstract words / Unrelated / Long term	Concrete words / Related / Short term	5,213(*)	1,393	,006	,95	9,47
	Concrete words / Related / Long term	7,627(*)	1,393	,000	3,37	11,89
	Abstract words / Related / Short term	2,533	1,371	,588	-1,66	6,73
	Abstract words / Related / Long term	4,308(*)	1,371	,039	,12	8,50
	Concrete words / Unrelated / Short term	2,241	1,360	,721	-1,92	6,40
	Concrete words / Unrelated / Long term	4,147	1,360	,051	-,01	8,31
	Abstract words / Unrelated / Short term	-1,893	1,405	,880	-6,19	2,40

\* The mean difference is significant at the .05 level.

**MEANS PLOT**



**CHILDREN**

**Descriptives<sup>1</sup>**  
 data\_con

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Concrete words / Related / Short term	29	10,66	8,316	1,544	7,49	13,82	1	29
Concrete words / Related / Long term	29	8,48	8,034	1,492	5,43	11,54	0	28
Abstract words / Related / Short term	31	8,48	5,983	1,075	6,29	10,68	0	28
Abstract words / Related / Long term	31	5,97	5,492	,986	3,95	7,98	0	27
Concrete words / Unrelated / Short term	32	12,44	7,255	1,283	9,82	15,05	2	27
Concrete words / Unrelated / Long term	32	10,44	6,829	1,207	7,98	12,90	0	25
Abstract words / Unrelated / Short term	28	7,75	7,095	1,341	5,00	10,50	1	25
Abstract words / Unrelated / Long term	28	5,71	5,773	1,091	3,48	7,95	1	20
Total	240	8,80	7,151	,462	7,89	9,71	0	29

**Test of Homogeneity of Variances<sup>2</sup>**

data\_con

Levene Statistic	df1	df2	Sig.
2,376	7	232	,023

**TWO-WAY ANOVA<sup>3</sup>**

data\_con

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1161,183	7	165,883	3,480	,001
Within Groups	11059,217	232	47,669		
Total	12220,400	239			

Post Hoc Tests <sup>4</sup>

Multiple Comparisons

Dependent Variable: data\_con  
 Tukey HSD

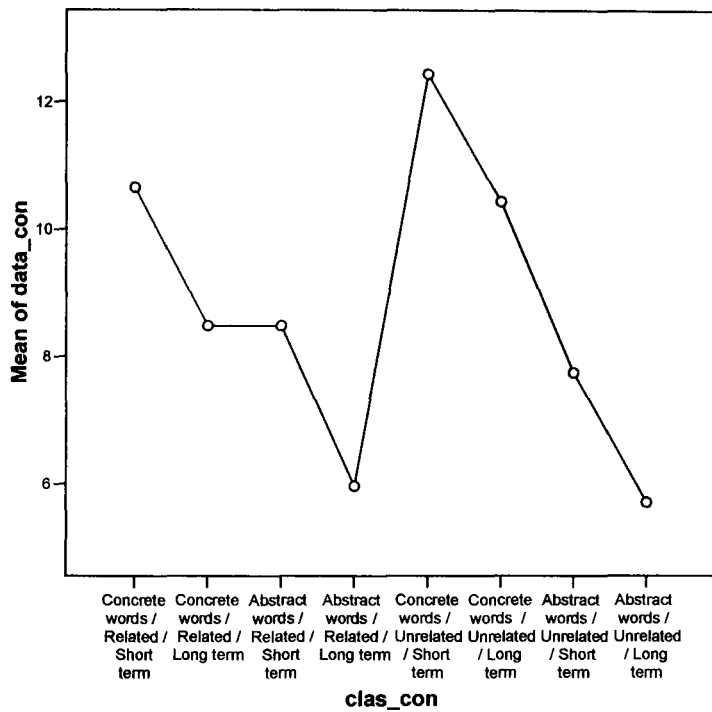
(I) clas_con	(J) clas_con	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Concrete words / Related / Short term	Concrete words / Related / Long term	2,172	1,813	,932	-3,37	7,72
	Abstract words / Related / Short term	2,171	1,784	,926	-3,28	7,63
	Abstract words / Related / Long term	4,687	1,784	,151	-,77	10,14
	Concrete words / Unrelated / Short term	-1,782	1,770	,973	-7,20	3,63
	Concrete words / Unrelated / Long term	,218	1,770	1,000	-5,20	5,63
	Abstract words / Unrelated / Short term	2,905	1,829	,757	-2,69	8,50
	Abstract words / Unrelated / Long term	4,941	1,829	,127	-,65	10,54
	Concrete words / Related / Long term	Concrete words / Related / Short term	-2,172	1,813	,932	-7,72
Abstract words / Related / Short term		-,001	1,784	1,000	-5,46	5,45
Abstract words / Related / Long term		2,515	1,784	,852	-2,94	7,97
Concrete words / Unrelated / Short term		-3,955	1,770	,335	-9,37	1,46
Concrete words / Unrelated / Long term		-1,955	1,770	,955	-7,37	3,46
Abstract words / Unrelated / Short term		,733	1,829	1,000	-4,86	6,33
Abstract words / Unrelated / Long term		2,768	1,829	,800	-2,83	8,36
Abstract words / Related / Short term		Concrete words / Related / Short term	-2,171	1,784	,926	-7,63
	Concrete words / Related / Long term	,001	1,784	1,000	-5,45	5,46
	Abstract words / Related / Long term	2,516	1,754	,840	-2,85	7,88
	Concrete words / Unrelated / Short term	-3,954	1,740	,313	-9,28	1,37
	Concrete words / Unrelated / Long term	-1,954	1,740	,951	-7,28	3,37
	Abstract words / Unrelated / Short term	,734	1,800	1,000	-4,77	6,24
	Abstract words / Unrelated / Long term	2,770	1,800	,786	-2,74	8,28
	Abstract words / Related / Long term	-4,687	1,784	,151	-10,14	,77

	Concrete words / Related / Long term	-2,515	1,784	,852	-7,97	2,94
	Abstract words / Related / Short term	-2,516	1,754	,840	-7,88	2,85
	Concrete words / Unrelated / Short term	-6,470(*)	1,740	,006	-11,79	-1,15
	Concrete words / Unrelated / Long term	-4,470	1,740	,173	-9,79	,85
	Abstract words / Unrelated / Short term	-1,782	1,800	,975	-7,29	3,72
	Abstract words / Unrelated / Long term	,253	1,800	1,000	-5,25	5,76
Concrete words / Unrelated / Short term	Concrete words / Related / Short term	1,782	1,770	,973	-3,63	7,20
	Concrete words / Related / Long term	3,955	1,770	,335	-1,46	9,37
	Abstract words / Related / Short term	3,954	1,740	,313	-1,37	9,28
	Abstract words / Related / Long term	6,470(*)	1,740	,006	1,15	11,79
	Concrete words / Unrelated / Long term	2,000	1,726	,943	-3,28	7,28
	Abstract words / Unrelated / Short term	4,688	1,787	,153	-,78	10,15
	Abstract words / Unrelated / Long term	6,723(*)	1,787	,005	1,26	12,19
Concrete words / Unrelated / Long term	Concrete words / Related / Short term	-,218	1,770	1,000	-5,63	5,20
	Concrete words / Related / Long term	1,955	1,770	,955	-3,46	7,37
	Abstract words / Related / Short term	1,954	1,740	,951	-3,37	7,28
	Abstract words / Related / Long term	4,470	1,740	,173	-,85	9,79
	Concrete words / Unrelated / Short term	-2,000	1,726	,943	-7,28	3,28
	Abstract words / Unrelated / Short term	2,688	1,787	,805	-2,78	8,15
	Abstract words / Unrelated / Long term	4,723	1,787	,146	-,74	10,19
Abstract words / Unrelated / Short term	Concrete words / Related / Short term	-2,905	1,829	,757	-8,50	2,69
	Concrete words / Related / Long term	-,733	1,829	1,000	-6,33	4,86
	Abstract words / Related / Short term	-,734	1,800	1,000	-6,24	4,77
	Abstract words / Related / Long term	1,782	1,800	,975	-3,72	7,29
	Concrete words / Unrelated / Short term	-4,688	1,787	,153	-10,15	,78
	Concrete words / Unrelated / Long term	-2,688	1,787	,805	-8,15	2,78
	Abstract words / Unrelated / Long term	2,036	1,845	,956	-3,61	7,68

Abstract words / Unrelated / Long term	Concrete words / Related / Short term	-4,941	1,829	,127	-10,54	,65
	Concrete words / Related / Long term	-2,768	1,829	,800	-8,36	2,83
	Abstract words / Related / Short term	-2,770	1,800	,786	-8,28	2,74
	Abstract words / Related / Long term	-,253	1,800	1,000	-5,76	5,25
	Concrete words / Unrelated / Short term	-6,723(*)	1,787	,005	-12,19	-1,26
	Concrete words / Unrelated / Long term	-4,723	1,787	,146	-10,19	,74
	Abstract words / Unrelated / Short term	-2,036	1,845	,956	-7,68	3,61

\* The mean difference is significant at the .05 level.

**MEANS PLOT**



**ALL TOGETHER**

**Descriptives <sup>1</sup>**

data con

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Concrete words / Related / Short term	29	21,62	11,568	2,148	17,22	26,02	6	54
Concrete words / Related / Long term	29	17,03	11,767	2,185	12,56	21,51	3	50
Abstract words / Related / Short term	31	22,13	8,925	1,603	18,86	25,40	6	50
Abstract words / Related / Long term	31	17,84	9,176	1,648	14,47	21,20	5	50
Concrete words / Unrelated / Short term	32	26,38	10,570	1,869	22,56	30,19	9	45
Concrete words / Unrelated / Long term	32	22,47	9,538	1,686	19,03	25,91	9	42
Abstract words / Unrelated / Short term	28	25,82	10,992	2,077	21,56	30,08	7	49
Abstract words / Unrelated / Long term	28	21,89	9,620	1,818	18,16	25,62	8	44
Total	240	21,91	10,603	,684	20,56	23,26	3	54

**Test of Homogeneity of Variances <sup>2</sup>**

data con

Levene Statistic	df1	df2	Sig.
1,108	7	232	,359

**TWO-WAY ANOVA <sup>3</sup>**

data con

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2283,438	7	326,205	3,078	,004
Within Groups	24583,725	232	105,964		
Total	26867,163	239			



Post Hoc Tests <sup>4</sup>

Multiple Comparisons

Dependent Variable: data\_con  
 Tukey HSD

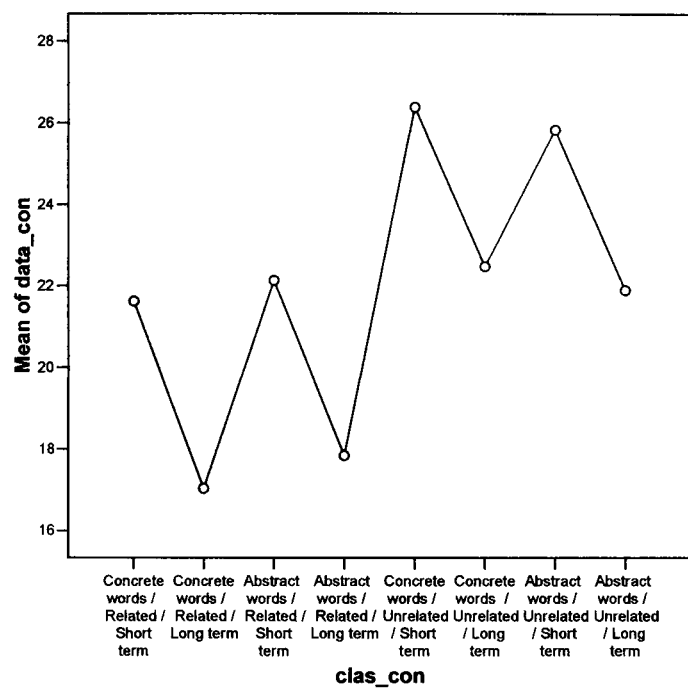
(I) clas_con	(J) clas_con	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Concrete words / Related / Short term	Concrete words / Related / Long term	4,586	2,703	,690	-3,68	12,86
	Abstract words / Related / Short term	-,508	2,659	1,000	-8,64	7,63
	Abstract words / Related / Long term	3,782	2,659	,846	-4,35	11,92
	Concrete words / Unrelated / Short term	-4,754	2,639	,620	-12,83	3,32
	Concrete words / Unrelated / Long term	-,848	2,639	1,000	-8,92	7,22
	Abstract words / Unrelated / Short term	-4,201	2,727	,785	-12,54	4,14
	Abstract words / Unrelated / Long term	-,272	2,727	1,000	-8,61	8,07
	Concrete words / Related / Long term	Concrete words / Related / Short term	-4,586	2,703	,690	-12,86
Abstract words / Related / Short term		-5,095	2,659	,542	-13,23	3,04
Abstract words / Related / Long term		-,804	2,659	1,000	-8,94	7,33
Concrete words / Unrelated / Short term		-9,341(*)	2,639	,011	-17,41	-1,27
Concrete words / Unrelated / Long term		-5,434	2,639	,445	-13,51	2,64
Abstract words / Unrelated / Short term		-8,787(*)	2,727	,031	-17,13	-,44
Abstract words / Unrelated / Long term		-4,858	2,727	,633	-13,20	3,48
Abstract words / Related / Short term	Concrete words / Related / Short term	,508	2,659	1,000	-7,63	8,64
	Concrete words / Related / Long term	5,095	2,659	,542	-3,04	13,23
	Abstract words / Related / Long term	4,290	2,615	,725	-3,71	12,29
	Concrete words / Unrelated / Short term	-4,246	2,594	,728	-12,18	3,69
	Concrete words / Unrelated / Long term	-,340	2,594	1,000	-8,27	7,60
	Abstract words / Unrelated / Short term	-3,692	2,684	,867	-11,90	4,52
	Abstract words / Unrelated / Long term	,236	2,684	1,000	-7,97	8,45
Abstract words / Related / Long term	Concrete words / Related / Short term	-3,782	2,659	,846	-11,92	4,35
	Concrete words / Related / Long term	,804	2,659	1,000	-7,33	8,94

	Abstract words / Related / Short term	-4,290	2,615	,725	-12,29	3,71
	Concrete words / Unrelated / Short term	-8,536(*)	2,594	,025	-16,47	-,60
	Concrete words / Unrelated / Long term	-4,630	2,594	,631	-12,57	3,30
	Abstract words / Unrelated / Short term	-7,983	2,684	,063	-16,19	,23
	Abstract words / Unrelated / Long term	-4,054	2,684	,801	-12,26	4,16
Concrete words / Unrelated / Short term	Concrete words / Related / Short term	4,754	2,639	,620	-3,32	12,83
	Concrete words / Related / Long term	9,341(*)	2,639	,011	1,27	17,41
	Abstract words / Related / Short term	4,246	2,594	,728	-3,69	12,18
	Abstract words / Related / Long term	8,536(*)	2,594	,025	,60	16,47
	Concrete words / Unrelated / Long term	3,906	2,573	,797	-3,97	11,78
	Abstract words / Unrelated / Short term	,554	2,664	1,000	-7,59	8,70
	Abstract words / Unrelated / Long term	4,482	2,664	,699	-3,67	12,63
Concrete words / Unrelated / Long term	Concrete words / Related / Short term	,848	2,639	1,000	-7,22	8,92
	Concrete words / Related / Long term	5,434	2,639	,445	-2,64	13,51
	Abstract words / Related / Short term	,340	2,594	1,000	-7,60	8,27
	Abstract words / Related / Long term	4,630	2,594	,631	-3,30	12,57
	Concrete words / Unrelated / Short term	-3,906	2,573	,797	-11,78	3,97
	Abstract words / Unrelated / Short term	-3,353	2,664	,913	-11,50	4,80
	Abstract words / Unrelated / Long term	,576	2,664	1,000	-7,57	8,72
Abstract words / Unrelated / Short term	Concrete words / Related / Short term	4,201	2,727	,785	-4,14	12,54
	Concrete words / Related / Long term	8,787(*)	2,727	,031	,44	17,13
	Abstract words / Related / Short term	3,692	2,684	,867	-4,52	11,90
	Abstract words / Related / Long term	7,983	2,684	,063	-,23	16,19
	Concrete words / Unrelated / Short term	-,554	2,664	1,000	-8,70	7,59
	Concrete words / Unrelated / Long term	3,353	2,664	,913	-4,80	11,50
	Abstract words / Unrelated / Long term	3,929	2,751	,843	-4,49	12,34
Abstract words / Unrelated / Long term	Concrete words / Related / Short term	,272	2,727	1,000	-8,07	8,61

Concrete words / Related / Long term	4,858	2,727	,633	-3,48	13,20
Abstract words / Related / Short term	-,236	2,684	1,000	-8,45	7,97
Abstract words / Related / Long term	4,054	2,684	,801	-4,16	12,26
Concrete words / Unrelated / Short term	-4,482	2,664	,699	-12,63	3,67
Concrete words / Unrelated / Long term	-,576	2,664	1,000	-8,72	7,57
Abstract words / Unrelated / Short term	-3,929	2,751	,843	-12,34	4,49

\* The mean difference is significant at the .05 level.

MEANS PLOT



## NOTES

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1 This table displays descriptive statistics for each group and for the entire data set. N indicates the size of each group. The effects of unequal variances will be reduced if the group sizes are approximately equal. Mean shows the average values. Two-way ANOVA compares these sample estimates to determine if the population means differ. The standard deviation indicates the amount of variability of the scores in each group. These values should be similar to each other for ANOVA to be appropriate. Equality can be inspected via the Levene test. The 95% confidence interval for the mean indicates the upper and lower bounds which contain the true value of the population mean 95% of the time.

2 Two-way ANOVA assumes that the variances of the groups are all equal. This table displays the result of the Levene test for homogeneity of variances. The significance value exceeds .05, suggesting that the variances are equal and the assumption is justified.

3 The results of the analysis are presented in an Two-way ANOVA table. The total variation is partitioned into two components. Between Groups represents variation of the group means around the overall mean. Within Groups represents variation of the individual scores around their respective group means. Sig indicates the significance level of the F-test. Small significance values (<.05) indicate group differences.

4 Post Hoc comparisons is used to determine which group(s) differ. This table lists the pairwise comparisons of the group means for all selected post hoc procedures. Mean difference lists the differences between the sample means. The table also presents the standard error for the pairwise comparisons. Sig lists the probability that the population mean difference is zero. A 95% confidence interval is constructed for each difference. If this interval contains zero, the two groups do not differ. The mean difference results marked with an asterisk (\*) indicate a statistical difference due to the significance being lower than 0,05. Conclusions are useful to be extracted only between compatible groups in terms of Short and Long Term Test.