SEMESTER B 2017-2018

LT 4254
PSYCHOLINGUISTICS OF READING

To what extent does the language proficiency of the L2 English speakers affect the Pun Processing in Psycholinguistic perspectives?

GROUP 4
LAM Wai Kit, Ricky
LEE Oi Yee, Michelle
MAN Yi Ching, Clarice
TSE Ka Fai, Byron
WONG Zoi Tung, Natalie

CONTENT

- INTRODUCTION
- LITERATURE REVIEW
- PREDICTIONS AND HYPOTHESIS
- METHODOLOGY
- EXPERIMENTS
- LIMITATIONS & IMPROVEMENT
- IMPLICATION & CONCLUSION
- REFERENCE

Introduction

- Puns
  - The **verbal contexts** with an existence of intentional exploitation of phonetic processes
  - **Suggest multi-meanings simultaneously** (Guidi, 2012)
    - Words containing 2 meanings with 1 being implicit
    - Required ambiguity processings

pun

- Types of puns
  - Homophonic pun,
  - Homographic pun,
  - Homonymic pun,
  - Compound

- How speakers perceived ambiguous words?
  - Eye-tracking experiment

- How the brain contributes to the response of L2 English speakers in different language proficiency?
  - EEG test (N400)

Literature Review

"Language Awareness and Comprehension through Puns among ESL learners"
---Teresa Lucas, 2005

Definitions and Key Features of Puns

- A pun is a **play on words** which conducts a humorous effect
  - (1) By using a word with two or more meanings
  - (2) By using similar sounding words with different meanings. (Literacy Device)
- Puns are verbal contexts, including an intentional exploitation of phonetic processes
- To reflect **two meanings simultaneously** (Guidi, 2012).
- Puns rely on the effect on correlating distinct meanings in linguistics form
- Aims at achieving and creating diverse structural and lexical means
- Puns are mostly based on **metaphors**
- Puns also based on perfect **homography** / **homography** (Solska,2012)
  - Only work in texts in written form
  - Common in advertisement

Objectives

- Examined how learner-generated attention to the aspects of language e.g. totality of form, meaning and use generated better comprehension
  - Low-advanced and High-advanced English second language(ESL) learners
  - A collaborative participation task involving in understanding the ambiguity of puns

Results

- The task deciphering 2 meanings:
  - Faciliated participants to consider the aspect of language
  - 35 / 40: successful incidences:
  - Remaining 5 failed cases:
    - No attention to language occured when scneario 3 happened

Discussion

- Learners achieved **greater comprehension**:
  - **Collaborative dialogues** between participants
  - **Metalinguistics awareness**
    - With focus on phonological, morphological, syntactical and lexical aspects.

- General Increase in Comprehension:
  - **Remarkable understanding** in puns when related to the **linguistic aspect of the ambiguity**
    - Opening dialogues: 28.75% → Follow-up interview: 91.25%
  - Incapability in understanding puns corresponds to absence of LRE
    - 4 /5 cases
  - Reasons:
    - Usage of examples of language
      - **Language play - primary function of language**
        - Children naturally engage in language play or language development
      - Language play - **creative function of language**
        - Deal with ambiguity on a context basis

Prediction & Hypothesis

L2 English learners	Response
Lower proficiency	a **longer response time** in pun processing
Higher proficiency	a **shorter response time** in pun processing

- Eye-movement measurement
  - Good L2 learners may have more forward **sacaades**, less **fixations**
  - Poor L2 learners may have more **fixations**, **regressions**, longer **first-pass**
- EEG Measurements
  - Good L2 learners may elicit a **smaller N400** and a faster brain response
    - Easier in retrieving meanings
    - Less energy required for processing
  - Poor L2 learners may elicit a **larger N400** and a slower brain response
    - Harder in retrieving meanings
    - More energy required for processing

Methodology:

- Two stimulus-response experiments.
  - Eye-tracking test
  - EEG test
- By comparing the results of the above experiments...
  - It shows how much language proficiency affects one's understanding of pun.
- Target: Student aged 13-17, secondary school, English as L2
  - Reason: Youngsters will do better than adults in second language learning. (Steinberg, 2001) In terms of:
    - Natural Input, Memory, Induction, Motor skills, Explicative processing
- Inviting 60 participants, classified them with a English Proficency Test
  - First 40%: Group A (High), Mid 30%: Group B (Mid), Bottom 30%: Group C (Low)
  - Reason: To compare whether language proficiency affects the understanding of pun.

Details about Proficiceny Test:

- Time allowed: 30-min
- Consists of 10 questions – each of them with a non-pun test word. (No multiple choices)
- Test words are designed with reference to semantic network model. (Quillian, 1969)
- Test words are all subordinates. Participant will be asked to write down the corresponding superordinate to show their understanding to the word.
- 1 point will be given to correct answer.
- To answer the questions properly, the participants are required to have certain proficiency in lexical and syntactical comprehension, because a word can be semantically different in various contexts.

Sample of the proficiency test:

Question no.	Sentences
1	My mother advised me to eat an **apple** everyday.
2	I forgot to bring an **eraser** yesterday.
3	Please switch off the **mobile phone** before coming in.
4	It is time to but a new **sofa** at our home.
5	I would prefer the **yellow** t-shirt.
6	Can we wear **high heels** in the graduation dinner?
7	**Dogs and cats** are both obedient in characters.
8	I go to school by **bus** everyday.
9	**Orange juice** is healthy and tasty.
10	I love playing **basketball**.

Experiment Materials

1	Don't make it **tear** or I will be mad at you.

- **tear /teər/** [To damage by splitting] VS **tear /tɪər/** [To cry] **HOMOGRAPHIC**
  - Orthographically same, different semantically and phonologically

2	Seven days without laughter make one **weak.**

- **weak /wik/** [To be poor physically] VS **week /wik/** [A period of 7 days] **HOMOPHONIC**
  - Phonologically same, but different semantically and orthographically.

3	I used to be a banker, but I lost **interest.**

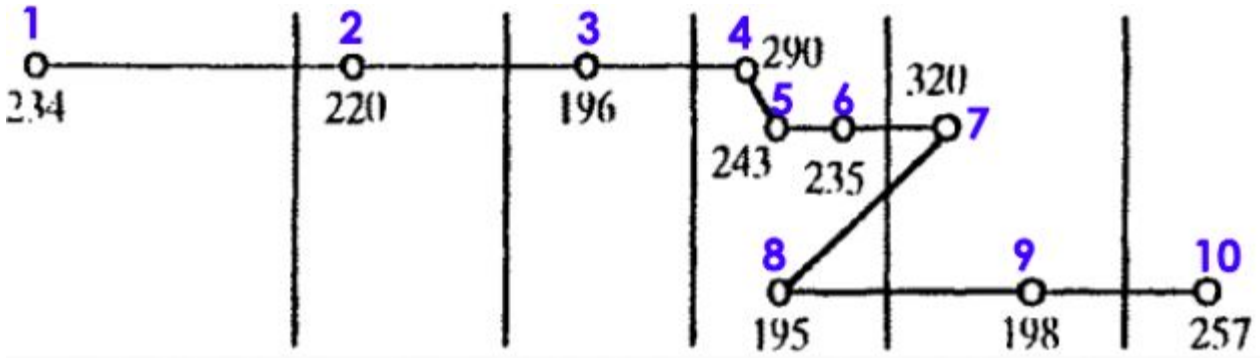
- **Interest /ɪntərɪst/** [A feeling of being interested] VS
  Interest /ɪntərɪst/ [An income earned by keeping deposit in a bank] **HOMONYMIC**
  - "Interest" of the above are the same phonologically and orthographically, but they are different semantically.

Experiment 1: Eye-tracking

- Facts about reading a pun:
  - **Longer processing time means harder understanding of a pun.**
    - First fixation: 4
    - First-pass: 4+5+6
    - Second-pass: 8
      - Total time = 23 (4+5+6+8)

- Since “flies” is the problematic word (pun), we expect its fixation time is longer.

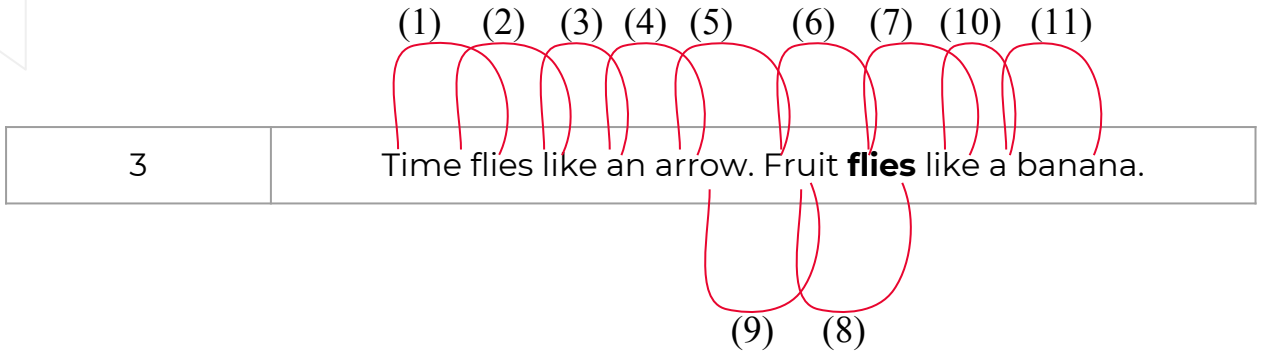
3	Time flies like an arrow. Fruit flies like a banana.



Eye-movement measurements:

- By using Eye-tracker (Harley, 2008)
  - It can detect pupil and corneal reflection.
  - It can map the eye movements to eye fixation positions.

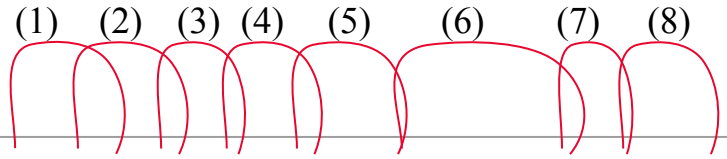
- Eye-movement map 1:



- The above numbers refer to one's direction of reading a sentence.
  - During the problematic word (Pun), participant may **move backward (regression)** to re-analyze "flies".
    - An indication of **misunderstanding** of some parts of a text. (Steinberg, 2001)

Con't

- Eye-movement map 2:



3	Time flies like an arrow. Fruit **flies** like a banana.

- The numbers of the above refer to one's direction of reading a sentence.
  - During the problematic word (pun), participant may **jump (saccade)** the word that is highly predictable.
    - An indication of **understanding** of some parts of a text. (Steinberg, 2001)

- Comparison
  - Given that Group A, B and C are different in terms of the proficiency in English,
    - Comparing their frequency of...
      - **Fixation**
      - **Regression**
      - **Saccade**
  - The results can show whether **language proficiency** is a factor of pun's understanding.

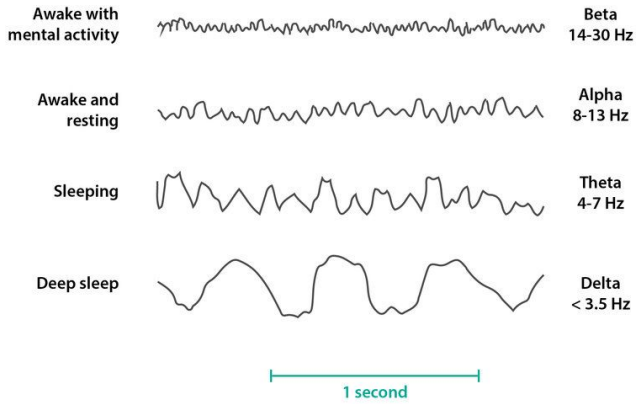
Assumption:

- Participant with **higher English proficiency** tends...
  - To stay in a word shorter.
  - To jump the words.
  - **Not to** move backwards.

- Participant with **lower English proficiency** tends...
  - To stay in a word longer.
  - **Not to** jump the words.
  - **More often to** move backwards.

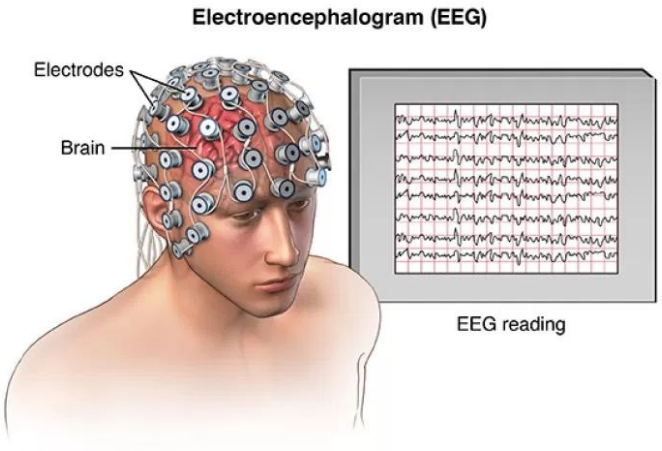
	Fixation times	**Regression times**	**Saccade times**
Group A	Lower than B & C	Lower than B & C	Higher than B & C
Group B	Higher than A, but lower than C	Higher than A, but lower than C	Higher than C, but lower than A
Group C	Higher than A & B	Higher than A & B	Lower than A & B

Experiment 2: EEG Test



- EEG → Electroencephalography
  - A tool to record **eletrical signal from the brain**

- Use several electrodes attached to scalps
  - To **detect** electric signals and therefore analyze **brain activity**



Con't

- According to Dawson in 1947:

  "There should be a systematic response of brain to an event"

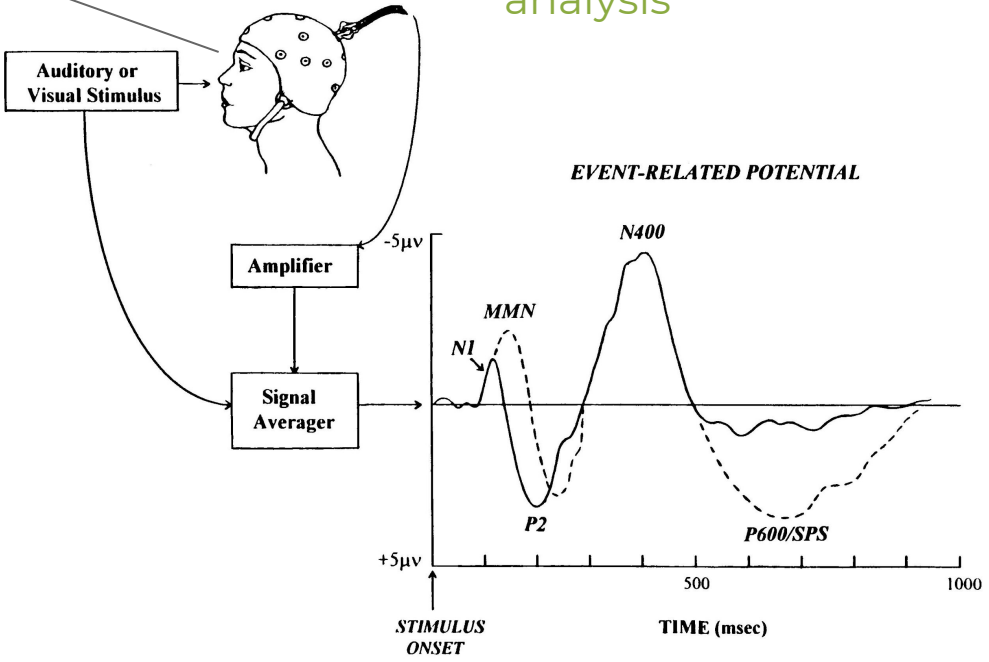
- By using EEG, we can retrieve ***ERP (Event-related Potentials)***
  - An **average value** after many trials from EEG experiment
  - Observing one of the compents: N400

- N400
  - A **negative evoked response** with its peak around 400ms after stimulus onset
  - Related to **Semantics** → Word meaning matters

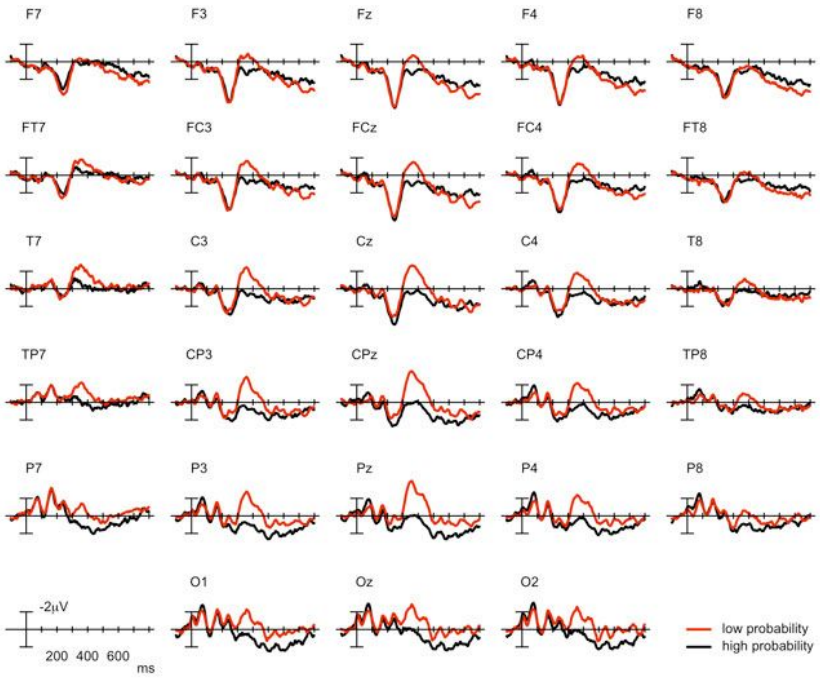
How to conduct an EEG Test?

- Paricipants will read the 3 test materials
  - Sentence will be placed in middle to **avoid excessive eye movement**
- Electrodes on the scalp record **brain signals when reading**
- After processing and averaging, N400 for analysis

2	**Seven days without laughter make one weak.**



What can N400 shows?



- As N400 is an **index** to show human's reaction towards words they have read in semantic aspect:

- The values can also reflect the **time used** for giving response/ understanding the meaning of words

- Higher → **Predictable**, **Familiar**
  - Easy to understand, shorter time
  - **Vice versa**

- Comparison can be made

Assumption & Comparison:

- After participants are divided into 3 groups and conducted experiments, we assume that:

	Proficiency	N400 Level	Time Used
Group A	Highest	Lowest	Least
Group B	Middle	Middle	Average
Group C	Lowest	Highest	Most

Limitations and Improvement

- Grouping of participants
  - What is the standard of the boundary? (40%, 30%, 30%)
  - May not reflect the real language proficiency (Self-decided classification)
  - Improvement:
    - Percentage grouping → **Linear regression**
    - Rank the participants into 11 level/section (Based on the score: 0 to 10)
    - Draw a **scatter plot graph** to see how the comprehensibility matches the language proficiency of the participants in each level
    - Make the whole comparison and analysis and find out whether our hypothesis is proved.

- Length of test materials & Position of target words
  - Those may vary the final result
  - Longer sentences may allow more time for comprehension
  - Front position: No time to understand, Final position: Problem of **Recap**
  - Improvement:
    - Almost-the-same **length** of test materials
    - Almost-the-same **position** of the target words

Implications and Conclusion

Recap our hypotheses:

*"The language proficiency of the L2 speakers are **positively correlated** to the response time."*

Experiment:

- Eye-tracking Experiment
  - Understand the difference of puns processing of the participants through the fixation, regression and saccade time
- EEG Test
  - Understand the difference of response times of the puns with the data from N400

Con't

- With the results in our experiment,
- Proved whether the language proficiency of the L2 speakers are **positively** correlated to the response time

- Explains the ambiguous understanding of different ads / slogan nowadays
  - Different language proficiency will take different time to construe the meaning of puns

- **Further research:**
  - The difference of the L1 and L2 speakers processing puns
  - The difference between children and adults in pun processing

References

Guidi, A. (2012). Are pun mechanisms universal? A comparative analysis across language families. Humor, 25(3), 339–366.

Harley, T.A. (2008) The Psychology of language: from data to theory (3rd ed.)

Jackson, D. O. (2001). Key concepts in ELT. Language-related episodes. *ELT journal*, *55*(3), 298-299.

Lucas, T. (2005). Language awareness and comprehension through puns among ESL learners. *Language Awareness*, *14*(4), 221-238.

McHugh, T., & Buchanan, L. (2016). Pun processing from a psycholinguistic perspective: Introducing the Model of Psycholinguistic Hemispheric Incongruity Laughter (M. PHIL). Laterality: Asymmetries of Body, Brain and Cognition, 21(4-6), 455-483.

Sheridan, H., Reingold, E. M., & Daneman, M. (2009). Using puns to study contextual influences on lexical ambiguity resolution: Evidence from eye movements. Psychonomic Bulletin & Review, 16(5), 875–881.

Solska, A. (2012). The Relevance-Based Model of Context in Processing Puns. Research in Language,10(4). doi:10.2478/v10015-012-0001-0

Steinberg, D. D. (2001) An Introduction of Psycholinguistics. New York: Longman.

The End