SYNTACTIC ANALYSIS PREFERENCE: HOW FILIPINOS DO WITH GLOBALLY-AMBIGUOUS SENTENCES

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Abstract. Although sentence processing has been amply studied, none focused on Filipinos as processors nor on their syntactic analysis preference. Hence, this qualitative-descriptive study determined whether Filipinos prefer the less computationally-demanding approach in processing isolated globally-ambiguous sentences through the garden-path principles. It also ascertained the significant difference in syntactic analysis preferences between two groups of respondents. Utilizing a ten-item dichotomous researcher-developed questionnaire, 54 university students that were selected through a non-random purposive sampling, participated in the investigation that was conducted at Cebu Technological University-Danao Campus. The study yields a preference for minimal attachment and the prevalence of late closure in sentence processing among Filipino university students. This provides fresh evidence from respondents of a different language background, substantiating the Garden-Path Theory that sentence processors opt for the simplest syntactic structure for the meaning of isolated, globally-ambiguous sentences. The same findings have valuable pedagogical implication as such could inform English instructors on the use of just the right linguistic structures with students in instances that necessitate the presentation of isolated sentences in order to ensure that effective classroom communication is optimized.

Introduction

The goal of any theory of sentence processing is to determine how people

arrive at the desired interpretation of a given sentence (Garret; Pickering as cited by Nordquist, 2016, para. 1) as knowledge on how it is done could suggest that eventual optimized effective communication can be ensured (Jaeger & Snider as cited by Kaan, 2014). Most of the studies conducted on sentence processing, however, especially the ones that dealt with the principles of minimal attachment and late closure, were on native English speakers and other English as Second Language (ESL) learners. None was known for having focused on Filipinos as processors nor on their syntactic analysis preferences. Hence, this study aimed at determining whether Filipinos prefer the less computationally-demanding approach in processing isolated globally-ambiguous sentences through the garden-path principles, and ascertained the significant difference in syntactic analysis preferences between the two groups of respondents.

A sentence processing approach is less computationally-demanding when it does not require the human sentence processor to undergo the burden of hierarchically organizing complex phrase structures and working out on what a sentence means based on them. Minimal attachment and late closure are regarded by some linguists as two of the less computationally-demanding approaches in sentence processing. The former is a principle wherein the human sentence processor interprets a sentence in terms of the simplest syntactic structure while the latter is a principle wherein incoming words tend to get associated with ones currently being processed. Both are usually employed in processing globally-ambiguous sentences which bear at least two possible interpretations. That forces the human sentence processor to decide which one, as opposed to ones containing local ambiguity called garden-path sentences (Qian, 2015) which give the human sentence processor a chance to recover from a wrong interpretation.

This research was a qualitative-descriptive study that utilized a ten-item dichotomous survey questionnaire (items are either closely patterned or adopted from earlier sentence processing studies or lectures: Altmann, 1998; Christiansen, 2017; De Vincenzi, 1991; Gaskel & Altmann, 2007; Hindle & Rooth, 1993; Krocker & Knoeferle, 2017). It was deemed pertinent as findings could somehow shed light on whether the Filipinos' approach to sentence processing, like the native English speakers who generally conform to late-closure preference (Sekerina, Fernandez, & Petrova, 2004), supports the Garden-Path Theory, and validates Gilboy et al.'s claim that the human parser attempts to build a structure with the minimum number of possible nodes (Rodriguez, 2004). Knowledge on these respondents' syntactic analysis preference could also inform university English language instructors, specifically this researcher's colleagues at Cebu Technological University-Danao City Campus, as to the linguistic structures to use with students in instances that necessitate the presentation of isolated sentences in order to ensure that effective classroom communication is optimized.

Review of the Literature

Although it has been presupposed by one of the contending sentence processing models that the human sentence processor can set off a number of analyses at once and can use both syntactic and non-syntactic information in one setting according to Van Gompel, Pickering, and Traxler (2001), this study is anchored on the Garden-Path Theory which compares the processing of a sentence to "walking down a winding path through a garden and choosing between certain splits in the path and continuing down a subsidiary path until reaching the end, and similarly reaching the end of the sentence" (Frazier, 1978 as cited by Buck, 2017, p. 1).

The human sentence processor, based on this theory, works out on serial syntactic analyses in two stages wherein one pieces together a preliminary analysis by drawing upon a restricted range of information in the first stage, and accesses other sources of information such as word frequency, plausibility, discourse context, syntactic complexity, and intonation during the second stage. These other sources of information, though, may sometimes cause the human sentence processor to abandon the preliminary analysis and compute another. Simply put, "the human sentence processor makes initial decisions on the basis of strategies defined in terms of syntactic information alone and uses thematic information in the second stage" (Van Gompel et al., 2001, p. 225). Van Gompel et al. refer to the Garden-Path Theory as the best-known example of a fixed-choice two-stage model wherein the human sentence processor always follows the structural principles of minimal attachment and late closure to ascertain which analysis to adopt.
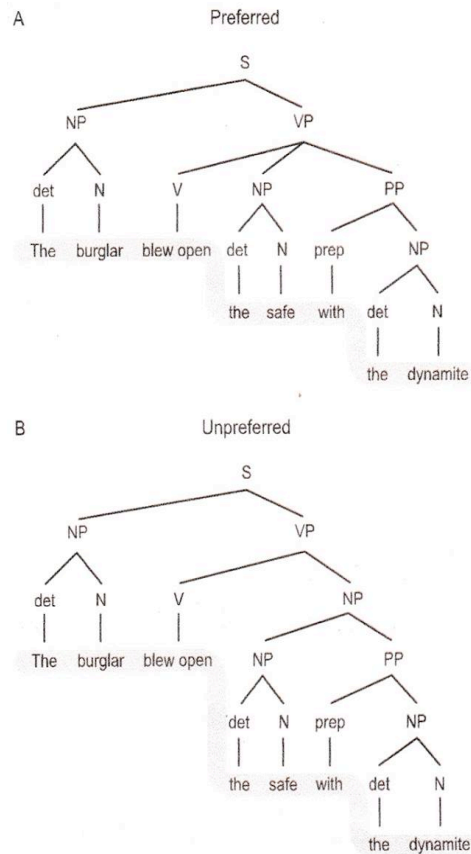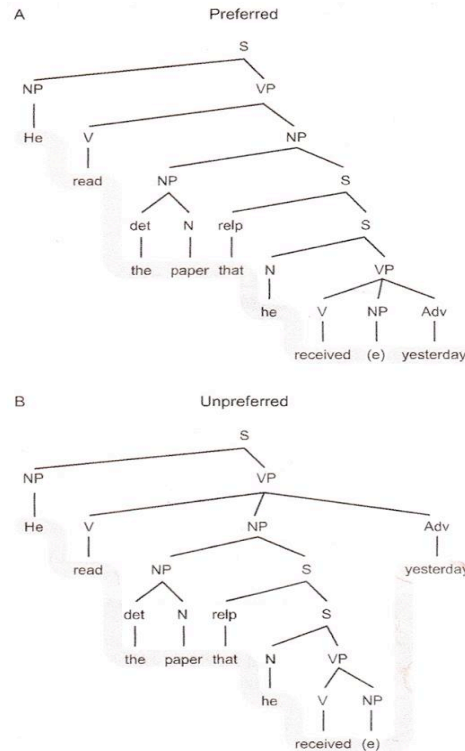
Figure 1. Minimal attachment preference

S=sentence; NP=noun phrase; VP=verb phrase; det=determiner; N=noun; V=verb; PP=prepositional phrase; prep=preposition

According to Frazier (as cited in Buck, 2017), the principle of minimal attachment posits that a reader will choose the garden path with the fewest syntactic branches before a more complex one. In Altmann's example, "The burglar blew open the safe with the dynamite" (see Fig. 1 adopted from Altmann, 1998), it is claimed that the human sentence processor prefers to associate the prepositional phrase (PP), with "the dynamite" with the verb phrase (VP), "blew open the safe". This PP and VP association suggests that the dynamite was used to blow open the safe. This meaning is preferred since the principle of minimal attachment dictates that the human sentence processor adopts the analysis that requires the simpler structure with less branching points, than what could be the intended meaning in (B), "The burglar blew open the safe that contained the dynamite". This reading is made possible when the PP is associated with the noun phrase (NP), "the safe". This is the manner of reading that requires more branching points; hence, making it more complex than preferred.

The late closure principle, on the other hand, prescribes that the string of words being processed is kept "open" as long as possible, resulting into incoming words being amalgamated within the more recent string of words as in the example, "He read the paper that he received yesterday", (see Figure 2, adopted from Altmann, 1998).

Figure 2. Late Closure Preference

S=sentence; NP=noun phrase; VP=verb phrase; det=determiner; N=noun; V=verb; Adv=adverb; relp=relative pronoun; e=null element (the object of the relative clause, "the essay").

In (A), the adverb (Adv), "yesterday" is associated with the lower (more recent) verb, "received;" hence, referring to the more recent action of "receiving." Whereas in (B), the Adv "yesterday" is associated with the higher (earlier) verb, "read;" hence, referring to when that action (reading) happened.

Buck (2017) illustrated the same late closure principle through the example, "The boy said that she was going to sing loudly". When the human sentence processor reads, "the boy said that" and stops at that point, the structure is simple and with minimal attachment having only the noun phrase (`NP), "the boy" and the verb phrase (VP), "said that". But when the human sentence processor comes upon the pronoun, "she", the simple sentence which initially had only the NP and the VP must now be changed into a sentence that does not only have an NP, a VP, but also a sentential complement as evidenced by "that".

The Adv, "loudly" which is the last word of the sentence, is where the human sentence processor makes a decision whether to associate it with the lower (more recent) verb, "sing" or with the higher (earlier) verb, "said" (Buck, 2017).

Marica De Vincenzi and Remo Job (1993, p.189-190) who "investigated whether the grammatically defined principle of late closure applies in Italian," showed that it does so in the initial parsing. The pair also pointed out that the minimal attachment and late closure principles along with the other parsing proposal strategies advanced by notable linguists, share the same simple principle of going for an interpretation that requires the least computation; hence, less effort.

Moreover, although Frenck-Mestre and Pynte (as cited by Rodrigues, 2004, pp. 161 & 168) pointed out that second language (L2) learners had a preference to attach new input locally in an attachment preference study with advanced French-speaking learners of English and English-speaking learners of French, in his own study with English-speaking learners of Spanish and native Spanish speakers, Rodriguez ascertained that "the non-native speakers' performance seems to contradict the low attachment bias that could have been predicted for this group. These non-native speakers had an over-all preference for high attachment." However, the second noun phrase (NP2) modification as in sample sentence (1) decreases the high attachment (with first noun phrase or NP1) considerably.

(1) I borrowed <u>the computer</u> of <u>the Japanese secretary</u> that was new.
                         NP1   NP2

Respondents chose to associate the relative clause (RC), "that was new" with the modified NP2, "the Japanese secretary" than with the unmodified NP1, "the computer". This suggests that Rodriguez's respondents found it easier to process "the Japanese secretary was new" than the reading, "the computer was new". Simply put, when noun phrases are modified regardless of their position in the sentence, NP1 or NP2, processors are more inclined to associate the RC with NP2, the more recent noun phrase.

Guillermo Rodriguez (2004, p. 168), thus states that "the influence on both groups by the modified noun phrases can be explained by Gilboy et al.'s claims in relation to the minimal attachment principle advanced by Frazier and colleagues. The human parser attempts to build a structure with the minimum number of possible nodes."

Sekerina et al. (2004) showed findings that aligned Bulgarians with other high-attaching Slavic languages but were left puzzled why the subjects' strong preference for high attachment dramatically shifted to a low attachment preference or late closure in the presence of contextual support. They attributed

this preference to the fact that low (local) attachments, or late closures, are less computationally demanding than high (non-local) attachments which runs parallel with Vincenzi and Job's (1993) notion.

Papadopoulou (2005, p.114) also pointed out that, although in some studies L2 learners showed reluctance to commit to a particular parsing decision, this group's propensity to attach ambiguous inputs locally was evident in some other studies. "These processing patterns have been attributed either to their reduced ability to use structural information online, or their preference for applying late closure as a default strategy in order to avoid processing overload."

Although Sarmiento's (2016) study showed simultaneous attachment of RCs and prepositional phrases or PPs to two nodes (i.e. high and low) in both English and Spanish, given these two are closely related as both come from Indo-European roots that share the same SVO syntactic frame, he pointed out irregularities in parsing sentences with RCs and PPs such as the high attachment preference by the Dutch, French, and Greek; while Swedish, Norwegian, and Romanian, prefer the low attachment.

These findings about different groups' sentence processing preferences, extend even to a few Asians. This includes the Japanese who preferred high attachment and the Arabic with low attachment preferences (Sarmiento, 2016). Hwang (2005), in addition, who investigated the reliability of prosodic disambiguation in Korean L2 processing of late closure ambiguities by conducting morpho-syntax and prosody experiments, found that Korean L2ers showed a bias toward late closure or low attachment. Kweon (2009) investigated processing of sentences that contained temporally ambiguous PPs with ditransitive versus transitive verbs with first language (L1) Korean learners of L2 English, and found results that conform to the prediction made by the phrase-structure processing model associated with minimal attachment.

Kweon explained that the verb phrase or VP-attachment of the PP as in sentence (2) was easier than the NP-attachment in sentence (3) in both constructions with ditransitive and transitive verbs.

    (2) The guard <u>concealed</u> the weapon <u>from the criminal</u> yesterday.

    (3) The guard concealed <u>the weapon</u> of his new colleague yesterday.

This led to the assumption that the L2 readers might have depended on minimal attachment as a default (Kweon, 2009).

According to Frazier (as cited in Xiang, 2017), both minimal attachment and late closure follow the "general economy principle that the parser prefers the simplest structure to reduce computation load." This tendency by human sentence processors for late closure and minimal attachment in sentence processing supports the theory that "human sentence processors immediately choose one

possible outcome of the sentence with the simplest syntactic structure" (Buck, 2017, p. 4).

Apparently though, none of these studies focused on Filipinos as the human sentence processors nor on their syntactic analysis preferences. Hence, this study focused on determining whether Filipinos prefer the less computationally-demanding approach in processing isolated globally-ambiguous sentences through the Garden-Path principles. Specifically, this study sought to answer the following questions:

1. What is the preference of the Third-Year bachelor of education (BEED) students in processing isolated globally-ambiguous sentences in terms of minimal attachment and late closure?

2. How prevalent is the minimal attachment and late closure preferences of the Third-Year bachelor of science in education (BSED) students in the processing of isolated globally-ambiguous sentences?

3. What difference is there in the processing preferences of isolated globally-ambiguous sentences between the Third-Year BEED and BSED students?

Methodology

This part outlines the research design, research setting, sampling, data collection, and data analysis. Ethical considerations pertaining to the study are addressed, and the researcher's reflexivity is discussed.

Research Design

A qualitative-descriptive approach was adopted in this isolated globally-ambiguous sentence processing inquiry to describe the Filipinos' syntactic analysis preference through the garden-path principles of minimal attachment and late closure. The approach, which is an option for many when clear-cut descriptions of phenomena are preferred (Lambert & Lambert, 2012), aims at discovering the who, what, and where of events and individuals' or groups of individuals' experiences to obtain insights concerning an inadequately understood phenomenon (Kim et al., 2017). It is best for the current study as its sample population was selected through a non-random purposive sampling (typical for qualitative research) ensuring participants who are deemed rich in information for the intention of data saturation (Sandelowski, 2000). Further justifying the chosen design is its data collection that was carried out through a survey (typical for descriptive study). It utilized a ten-item dichotomous researcher-developed questionnaire. This mirrors Felser et al's (2003) processing of ambiguous sentences and Dussias' (2001) sentence parsing, wherein participants were

instructed to read sentences and to choose between two given possible interpretations for each sentence in both studies.

Research Setting

This study was conducted in Cebu Technological University-Danao Campus in Sabang, Danao City where I am an English instructor and the participants are enrolled as third year BEED and BSED students in the university's College of Education. The inquiry was carried out in CTU-Danao's Academic Building Room 3 during one of my scheduled classes with the participants.

Sampling

This study utilized a sample population of fifty-four (54) combined Third Year BEED and BSED students from the College of Education in CTU-Danao Campus. They were selected through a non-random purposive sampling. The BSED group consisted of 23 students while BEED students were 31.

Data Collection

A researcher-developed dichotomous ten-item survey questionnaire was used to elicit the respondents' syntactic analysis preferences for the given isolated globally-ambiguous sentences. Items are either closely patterned or adopted from lectures or earlier sentence processing studies such as Altmann (1998), Christiansen (2017), De Vincenzi (1991), Gaskel and Altmann (2007), Hindle and Rooth (1993), and Krocker and Knoeferle (2017). The questionnaire is divided into two parts: Part I is a five-item survey for minimal attachment and a five-item Part II which was used to examine late-closure prevalence. Each item which indicates the given isolated globally-ambiguous sentence for minimal attachment and late closure preferences is provided with two predetermined answers as options for possible meanings from which the respondents chose based on their syntactic analysis preference.

Before each of the combined 54 Third Year BEED and BSED students of CTU-Danao Campus was given the ten-item dichotomous survey questionnaire, they were first informed that they had been chosen to participate in the study that aims to determine whether Filipinos prefer the less computationally-demanding approach to isolated globally-ambiguous sentence processing and asked to accomplish and sign a research consent form.

All participants were then told of the questionnaire's content and were instructed about the general question that applies to each item, "What does each of the following sentences mean?" Participants were directed to encircle the letter of the first answer that came to mind. They were further told not to rethink nor make changes if a choice had already been made.

The respondents were asked to answer items in the following form:

(4) The thief blew open the vault with the dynamite.

         a.   Using the dynamite, the thief blew open the vault.
         b.   The thief blew open the vault that contained the dynamite.

During the filling of the questionnaire proper, the respondents were allowed to engage in self-paced reading of each item. The first task was to answer the five-item Part I that surveyed minimal attachment preference. The respondents were asked to proceed to the five-item Part II in the same questionnaire which examined late-closure preference as soon as they were done with Part I. Completed questionnaires were then collected from each respondent for data analysis.

Data Analysis

This study utilized a percentage-frequency distribution in analyzing the responses gathered during the survey. The participants' answers in each of the ten items in the dichotomous survey questionnaire were tallied. To ascertain their syntactic analysis preference in processing the questionnaires' isolated globally-ambiguous sentences, answers that favored minimal attachment in each item in part I were added and divided with each group's total population to get the percentage of the participants that preferred the principle. The same was done for late-closure preference in part II for both groups: BEED and BSED students.

Ethical Consideration

Ethics approval for this study was obtained from the Research and Development Chairman of CTU-Danao Campus prior to its commencement. Research ethics consent forms were completed and signed by each of the 54 participants prior to their participation in the investigation.

Researcher's Reflexivity

In addition to being a grantee of the Scholarship for Graduate Studies (SGS)-Local of the Commission on Higher Education's (CHED) K to 12 Transition Program in Region VII of the Philippines and a student of Doctor of Philosophy in English Major in Language, I also am currently employed as an English instructor at CTU-Danao Campus where the study was conducted and the participants, who are currently my students were recruited. Acknowledging that although I find the aforesaid facts collectively as an advantage in the conduct of this study, I recognize as well that my identity as the researcher in relation to it, the study's participants, the environment, and any of my preconceptions about the topic, might be regarded as biases that may have potentially impacted the research process. Hence, upholding trustworthiness throughout the process was vital.

Results

Table 1 reports the third-year BEED students' preference in processing the 10 isolated globally-ambiguous sentences.

Table 1

The Third-Year BEED Students' Preference in Isolated Globally-Ambiguous Sentence Processing

Sentence processing preferences	Questionnaire items				
	1/6	2/7	3/8	4/9	5/10
Minimal attachment	26/83.87%	22/70.96%	4/12.90%	25/80.64%	25/80.64%
Late closure	29/93.54%	19/61.29%	7/22.58%	5/16.12%	21/67.74%

Note: Items 1-5 helped examine minimal attachment while items 6-10 focused on late-closure preference

This group of Filipinos showed a strong preference for the minimal attachment in items 1, 2, 4 and 5 (83.87%, 70.90%, 80.64%, and 80.64% respectively) with the exception in item 3 where only 4 or 12.90% of the 31 respondents preferred using the principle of minimal attachment. The same table also accounts for the group's irrefutable late closure preference in items 6, 7, and 10 (93.54%, 61.29%, and 67.74%) where only 7 or 22.58% and 5 or 16.12% of the respondents chose the principle of late closure in items 8 and 9.

Table 2 reveals the extent of the minimal attachment and late-closure preference prevalence in the garden-path sentence comprehension of the third year BSED students. The figures in items 1, 2, 4, and 5 (69.56%, 73.91%, 86.95%, and 86.95% respectively) reveal the prevalence of the minimal attachment preference with the exception in item 3 where only 6 or 26.08% of the 23 respondents preferred using the principle of minimal attachment.

Table 2

The Prevalence of Minimal Attachment and Late-Closure Preference in Isolated Globally-Ambiguous Sentence Comprehension of Third-Year BSED Students

Sentence processing preferences	Questionnaire items				
	1/6	2/7	3/8	4/9	5/10
Minimal attachment	16/69.56%	17/73.91%	6/26.08%	20/86.95%	20/86.95%
Late closure	22/95.65%	19/82.60%	9/39.13%	1/4.34%	16/69.56%

Note: Items 1-5 helped examine minimal attachment while items 6-10 of the same questionnaire focused on late-closure preference prevalence.

A prevalence can be noted as well for the late-closure preference in items 6, 7, and 10 (95.65%, 82.60%, and 69.56% respectively) despite the 9 or 39.13% and 1 or 4.34% of the total number of respondents who chose the principle of the late closure in items 8 and 9. The figures in both tables also reveal that there is no significant difference in the isolated globally-ambiguous sentence processing preferences between the BEED and BSED students as both groups showed a preference for the minimal attachment in the same items (1, 2, 4, and 5) with the exception in item 3, where only a combined 18.51% of the total number of 54 respondents preferred the principle.

The same is true when the majority in both groups chose the late closure in the same items (6, 7, and 10) with the exception in items 8 and 9 for both BEED and BSED students where only a combined 29.62% (for item 8) and 11.11% (for item 9) of the total number of respondents opted for the principle. The results apparently show the third-year BEED students' general preference for both minimal attachment and late-closure principles in the processing of isolated globally-ambiguous sentences while the preference for both by the third year BSED students is prevalent to a great extent.

Although only a few of the third-year BEED students preferred the minimal attachment in one of the five items that focused on the preference for this principle, the results evidently indicate that this group of Filipinos showed an over-all inclination for the lesser number of syntactic nodes in processing the given isolated globally-ambiguous sentences. These students chose to associate the prepositional phrases (PPs) with the verbs (Vs) rather than with the nouns (Ns) that precede these PPs as in the sentence:

> (5) Jake saw the tourist with the telescope.

The respondents chose to associate the PP, with the telescope with the V, saw; hence the respondents' preferred meaning, Using the telescope, Jake saw the

tourist. This corresponds with Kweon's (2009) findings that L2 readers might have depended on minimal attachment as a default and Gilboy et al's view that the parser attempts to build a structure with the minimum number of possible nodes (Rodriguez, 2004) given that along with other parsing proposal strategies advanced by notable linguists, minimal attachment principle goes for an interpretation that requires the least computation, hence less sentence processing effort (Vincenzi & Job, 1993). This is in stark contrast with the possibly intended sense but unpreferred, Jake saw the tourist who has the telescope. This second manner of reading the sentence is the result of the PP being associated with the noun phrase (NP), the tourist, which requires more computation; thus, more effort on the part of the human sentence processor since it is more complex; hence it is unpreferred.

Similarly, although only a few opted for the late closure in two of the five items that were examined for the preference for this principle, the findings apparently show that these respondents prefer the late closure in processing isolated globally-ambiguous sentences by choosing to associate PPs, adverbs, relative clauses (RCs), and the like with the most recent verbs (low attachment) or late closure than with the first or early verbs (high attachments) as in the example:

(6) The instructor read the essay that she received yesterday.

Filipinos prefer the late-closure principle which Papadopoulou (2005) refers to as a default strategy in order to avoid processing overload by attaching the Adv, yesterday with the most recent V, received (low attachment or late closure) hence the respondents' preferred meaning is, The instructor received the essay yesterday… According to Sekerina et al. (2004), this must be due to the late closures being less computationally demanding than high (non-local) attachments although it should be pointed out that Sekerina et al's Bulgarians shifted only to late closure with the facilitation effect of their research stimuli's contextual support whereas these Filipinos showed a general preference for the principle with isolated globally-ambiguous sentences. These respondents avoided the unpreferred but perhaps the intended meaning, The instructor read the essay yesterday, which is the upshot when the Adv is associated with the first V read (high attachment).

Like the BEED students, not many of the third year BSED respondents preferred the minimal attachment in one of the five items that were assessed for the preference for this principle. However, the results clearly show that the third year BSED students' preference for the lesser number of syntactic nodes is prevalent to a great extent since many among these Filipinos chose to associate the PPs with the Vs rather than with the Ns that precede these PPs as in the sentence:

(7)   The man called the woman with the megaphone.

The respondents chose to associate the PP, <u>with the megaphone</u> with the V, <u>called</u>; hence the respondents' preferred meaning, <u>Using the megaphone, the man called the woman</u>, suggesting that this second group of Filipinos preferred the principle of minimal attachment (Kweon, 2009; Rodriguez, 2004; Vincenzi & Job, 1993) just as Ying's (2004) respondents' use of fewer syntactic nodes which involve "minimal processing effort." This further means that this group of Filipinos preferred "reduced cognitive overload" (Christiansen, p. 5) over the feasibly intended sense but unpreferred, <u>The man called the woman who has the megaphone</u>. This meaning is the result of the PP being associated with the NP, <u>the woman</u>, which requires more computation and effort on the part of the human sentence processor; hence it is unpreferred.

In the same way, although very few opted for the late closure in two of the five items that examined for the preference for this principle, the findings apparently show that preference for late closure (low attachments) in isolated globally-ambiguous sentence comprehension is also prevalent to some extent when many of this group of respondents chose to associate PPs, adverbs, RCs, and the like with the most recent verbs (low attachment) than with the first or early verbs (high attachments) as in the example:

(8)   The reporter said the plane crashed last night.

This group of Filipinos also prefer the late closure principle by attaching the Adv, <u>last night</u> with the most recent V, <u>crashed</u> (low attachment or late closure); hence, the respondents' preferred meaning is <u>"The plane crashed last night," the reporter said.</u> This runs parallel with Cupples and Conroy's (2010) findings on native speakers and non-native speakers' strong preference for late closure as it is syntactically simpler than the unpreferred, but could be the intended meaning, <u>"The plane crashed," the reporter said last night</u>. This meaning is the outcome when the Adv is associated with the first V <u>said</u> (high attachment).

Apart from the reason that late closure is preferred as it is syntactically simpler (Cupples & Conroy, 2010), less computationally demanding (Sekerina et al., 2004), evading processing overload (Papaduopoluo, 2005), Ferreira and Karimi's (2016) account could also explain such preference. Both postulate that low attachment (which in this study is referred to as late closure) is due to the human sentence processor's working memory span. The two explained that human sentence processors who have low working memory spans attempt to make an interpretation early on through high attachments to reduce disequilibrium in order to "more efficiently keep the information under processing in memory" while human sentence processors who have high working memory spans can "cope with the disequilibrium" (for a long time) while in the process because they can efficiently retain "unstructured information" (resulting from delaying the association between linguistic categories) within memory (Ferreira & Karimi,

2016, p. 1033). This human sentence processor's facility in keeping unstructured information longer during disequilibrium makes them choose not to immediately attach the Adv. for instance to one of the Vs, resulting in more recent V attachments or late closures.

In conclusion, going for the simpler syntactic structure (Buck, 2017; Conroy & Cupples, 2010; Kweon, 2009), choosing to do what costs less effort in terms of computation (Vincenzi & Job, 1993), or choosing what leads to less sentence processing effort (Sekerina et al., 2004; Ying 2004), viewing both principles as default strategies to avoid processing overload (Kweon, 2009; Papadopoulou, 2005), and considering that some human sentence processors are equipped with high working memory spans (Karimi & Ferreira, 2016), could collectively account for the groups' minimal attachment and late closure preference or these principles' prevalence in sentence processing among Filipinos. Finally, no significant difference in the isolated globally-ambiguous sentence processing preferences between the third-year BEED and BSED students was observed as both groups showed a general propensity for the two principles in almost exactly the same way for the same items.

Conclusion

Based on the findings, like the native English speakers who generally conform to late closure (Sekerina et al., 2004), Filipinos follow the same syntactic analysis principle. Their preference for the minimal attachment in isolated globally-ambiguous sentence processing validates Gilboy et al.'s claim that the human parser attempts to build a structure with the minimum number of possible nodes (Rodriguez, 2004). This certainly provides another fresh evidence from respondents of a different language background substantiating the Garden-Path Theory that sentence processors opt for the simplest syntactic structure for the meaning of isolated globally ambiguous sentences. The same findings may also have a valuable pedagogical implication as such could inform English language instructors on the use of just the right linguistic structures like participial phrases. For example, ***Using the gun***, the policeman arrested the robber which is how Filipinos processed isolated globally-ambiguous sentences that end with PPs bearing "with," although using RCs as in The policeman arrested the robber ***who has the gun*** could also equally steer students right to the intended meaning, instead of using isolated sentences that are globally ambiguous like The policeman arrested the robber with the gun. In this way, the human sentence processor "will have no difficulty" with either garden-path (Ferreira, Bailey, & Ferraro, 2002) or isolated globally-ambiguous sentences consequently achieving optimized effective classroom communication with students. Finally, this study's findings could also be used to assist in the creation of English as a Second

Language (ESL) lesson plans and curriculums as well as job training courseware that could easily be understood by diverse employees or new hires.

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Appendix

Syntactic Analysis Preference:
How Filipinos Do with Globally-Ambiguous Sentences

QUESTIONNAIRE

Please read: What does each of the following sentences mean? Encircle the letter that corresponds to your answer.

Part I.
1. The thief blew open the vault with the dynamite.
    a. Using the dynamite, the thief blew open the vault.
    b. The thief blew open the vault that contained the dynamite.

2. Jake saw the tourist with the telescope.
    a. Using the telescope, Jake saw the tourist.
    b. Jake saw the tourist who has the telescope.

3. The policeman arrested the robber with the gun.
    a. Using the gun, the policeman arrested the robber.
    b. The policeman arrested the robber who has the gun.

4. The man called the woman with the megaphone.
    a. Using the megaphone, the man called the woman.
    b. The man called the woman who has the megaphone.

5. James hit the girl with the book.
    a. Using the book, James hit the girl.
    b. James hit the girl who has the book.

Part II.
1. The instructor read the essay that she received yesterday.
    a. The instructor received the essay yesterday and read it.
    b. The instructor received the essay and read it yesterday.

2. Jose put the newspaper Josefina was reading in the library
    a. Josefina was reading the newspaper in the library.
    b. Jose put the newspaper in the library.

3. The cake with the topping that was creamy didn't win the prize.
    a. The topping that was creamy didn't win the prize.
    b. The cake didn't win the prize.

4. Elena moved the cage of the parrot that was under the table.
    a. The parrot was under the table.
    b. Elena moved the cage that was under the table.

5. The reporter said the plane crashed last night.
    a. "The plane crashed last night," the reporter said.
    b. The reporter said last night that the plane crashed.

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