COMPREHENSIBILITY OF ENGLISH WRITTEN SENTENCES MADE BY NON-LANGUAGE UNIVERSITY STUDENTS

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Abstract

The study aimed to identify how an English native speaker and a highly proficient non-native speaker rated the comprehensibility of English sentences written by learners who were studying non-language majors. Nine essays written by students of Pharmacy and 14 essays written by students of Accounting were rated by the two raters. They were guided by a scoring rubric which emphasized mainly on the grammaticality and comprehensibility. Their ratings classified the sentences into two major categories: sentences with mistakes that potentially hinder comprehensibility, and sentences with mistakes that completely make them incomprehensible.

Mistakes that make sentences partially comprehensible include wrong word order, coma splice, wrong auxiliary, wrong form of finite verb, wrong form of active sentences, the omission of verb *be*, intensifier, and introductory "there". Mistakes that completely blocks comprehensibility are fragmented phrase, wrong collocations, mismatched markers, wrong part of speech, unfinished sentences, and excessively long sentences joined by a coordinator.

A number of suggestions for the teaching of grammar, writing, and vocabulary are then proposed on the basis of the findings.

Key words: Comprehensibility, errors, grammaticality, mistakes

Comprehensibility is an important issue in communication. When messages are delivered in a language that is foreign to the speakers or writers, it becomes even more critical. These senders of the messages have to put their ideas in meaningful strings of sentences, with the right grammatical patterns, and preferably appropriate collocations. Learners of English as a foreign language require many hours of studying the language, practicing,

gaining feedback, and correcting their output in order to produce increasingly longer and more comprehensible sentences. Constructing longer stretches of language requires the mastery of grammatical aspects in addition to choice of words and appropriateness of collocation. This requirement goes hand in hand with the common notion of how comprehensibility is related to grammar.

Theoretically, comprehension can be conceptualized in the framework of a set of theories. MacDonald, Pearlmutter and Seidenberg (cited in Eysenck, 2004) proposed constraint-based theory. This theory maintains that all relevant sources of information are available for immediate processing by the reader. When reading a sentence, various information, or constraint, is ranked according to the strength of the activation. The structure supported most by those various constraints is then decoded to obtain the meaning. Another theory is the Garden-Path model (Frazier and Rayner, cited in Eysenck, 2004). This theory posits that initially only the syntactic structures are processed and the simplest one is chosen based on two general principles: the principle of minimal attachment and the principle of late closure. The former involves preferring the patterns with fewest nodes, and the latter involves attaching new words encountered in the sentence to the current phrase or clause.

Comprehension itself is influenced by the difficulty in cognitively processing a sentence. If a sentence is difficult or ambiguous, its comprehensibility suffers. According to Strongman (2014), there are a number of factors that affect comprehension. They are the frequency of words, vague terms, and vague or ambiguous noun phrases. Vague terms comprise predicates with ambiguous meaning, while vague noun phrases refer to noun phrases or nouns that have unclear or ambiguous referents. In addition, complex syntax is also a factor that may render a sentence difficult to comprehend. A sentence may pack multiple ideas in intricate relationships, or convey ambiguous propositions, both of which tax the cognitive system and result in incomprehensibility of the sentence.

In addition to being viewed from grammar standpoint, a sentence can also be viewed in terms of its acceptability. Chomsky, Bricmont and Franck (2013) argue that while grammaticality is a theoretical term, acceptability is observational. It hinges on appropriateness to the situational context. Commonly, sentences that are perceived as acceptable should be grammatical (i.e. generated by adequate grammar). However, they also admit that "it is recognized that acceptable sentences might be ungrammatical and

grammatical sentences might be unacceptable" (Chomsky, Bricmont, and Frank, 2013, p. 122).

Many people equate comprehensibility with grammaticality. They commonly share the opinion that in order to be comprehensible, a piece of discourse must be composed of grammatically correct sentences. However, this is not necessarily true. Fetzer (2004, p. 19) argues that "grammaticality and well-formedness are not synonymous with sentence comprehension." Thus, while the sentence 'Bill seems not happy' is not grammatical, it is still deemed comprehensible. While from a theoretical standpoint the concept of grammaticality and comprehensibility are clearly two different issues, more need to be done empirically to refute or support that standpoint. For one thing, English native speakers and non-native speakers of English may not come to the same opinion about the degree of comprehensibility of students' written production. Given a stretch of sentences produced by non-native speakers, a native speaker would probably think that the sentence is comprehensible, while a non-native speaker highly proficient in English may believe otherwise. The opposite case may happen, too, whereby an English sentence produced by a non-native speaker is deemed comprehensible by the highly proficient non-native speaker, but considered ill-formed and incomprehensible by an English native speaker. In the same line, Hoffmann (2013) contends that grammaticality is only a matter of linguistic status, i.e. whether a string of sentence is generated by a grammar or not. Acceptability, on the other hand, is dependent not only on grammaticality, but also naturalness and comprehensibility, with the latter being defined as "being less clumsy, or easily understandable". Again, it implies that a sentence which by rules of grammar is not grammatical may be taken as acceptable if the receivers can somehow understand it easily.

In the era where English is increasingly used by people of different nationalities and English is learned by students of various disciplines other than language, the issue of comprehensibility cannot be undermined. An exploration into how native and non-native English speakers comprehend learners' sentences would pave the way for identifying further relevant actions that will impact the teaching of grammar and writing. By pointing out what kinds of errors most seriously affect comprehensibility, it will spare the teachers the burden of dealing with too many kinds of errors.

Research Objective and Related Studies

Against this background, the study aimed to determine how a native speaker and a non-native speaker view comprehensibility of sentences produced by university learners from two non-language departments.

The study offers two benefits for the realm of language teaching. First, it gives an insight into what makes a sentence comprehensible, and thus helps teachers of vocabulary, writing, and grammar to focus selectively on factors that cause incomprehensibility. Second, it informs students, in particular those who study English for their respective non-language majors, about specific linguistic areas which they need to attend most in order to make their written output comprehensible to any reader.

To date, there have been studies into comprehensibility of EFL learners' production. Isaacs & Trofimovich (2012) studied linguistic aspects that determine comprehensibility of EFL learners of different levels. They found five speech measures that clearly mark off L2 learners at different levels. Lexical richness and fluency measures discriminate between low-level learners; grammatical and discourse-level aspects discriminate between high-level learners; and word stress errors differentiated between learners of all levels. While their study focused on speeches, my study reported here explored comprehensibility of academic written production by students of non-language majors.

Parkinson and Musgrave (2014) studied noun phrase construction by learners of different proficiency levels. They found that less proficient learners produced high number of attributive adjectives, which is indeed widely taken as a feature acquired in earlier stage of language learning. More proficient groups, in contrast, produced noun modifiers that frequently appear in academic essays. Following this, Mazgutova and Kormos (2015) studied EAP learners' progress over the course of one month. They found that within that relatively short time, the learners showed higher lexical diversity and demonstrated higher noun-phrase complexity in their genre-specific syntactic constructions. They also exhibited more advanced repertoire of words and sentence patterns typical of expository texts in academic contexts.

A study that is more closely related to my topic was conducted by Someya, Ono and Yamanishi (2015). In their study, several native speakers of English and non-native speakers were asked to rate summaries written by Japanese EFL learners using a holistic rubric. It was found that non-native

speakers paid more attention to vocabulary, while native speakers of English focused more on content and language.

Another finding by James (2013) is equally relevant. He found that when judging the quality of essays written by EFL learners, that NNS (non-native speakers) professors were stricter in their judgment than NS (native speaker) professors. To both NS and NNS, the most serious errors involved wrong choices of lexical items, and this was logical because it is lexical items that largely determine the content of sentences. However, when it comes to grammaticality, NS professors were stricter than their NNS counterparts.

Judgment of grammaticality involves more than the grammar. It is not the grammar alone which matters but vocabulary also plays even a more important role. Gass and Selinker (2011, p. 266) offer an explanation on this point:

> There is more limited number of grammatical possibilities (or grammar rules) in language than there are vocabulary items or possible pronunciation. Thus, if a learner fails to mark agreement or puts items in the wrong order, there is a greater likelihood that an NS can fall back on his grammatical knowledge to make sense of what a learner is saying. However, if a learner uses an inappropriate or nonexistent vocabulary item, the NS may be sent down a comprehension path from which there is little possibility of return.

Camps, Villalobos and Shea (2012) argued that errors can be regarded as global or local. Global errors include those that are so severe that they prevent comprehension, while local errors still makes comprehension possible. They argued further that English native speakers may react differently to EFL errors: (1) they do not understand the message being delivered by the learners; (2) they can still comprehend the message despite the errors; (3) they understand something different than what is actually intended by the learners.

Typical Grammatical Errors among EFL Learners

Since this study dealt with grammaticality, it makes sense to review what other researchers have found in this area. Sun (2014) analyzed the written sentences of 39 Chinese EFL learners and found the following typical grammatical errors in their written production: misuse of determiners,

Chinese-English expression, wrong tense or verb form, misuse of prepositions, lack of S-V agreement, misuse of adverbials, missing verbs, misuse of quantifiers, missing NP/subject, and multiple verbs. This is a useful chart of grammatical errors, but it stopped short of identifying which ones could interfere most seriously with comprehension. My study attempted to explore into the identification of those that may cause comprehension breakdown.

Method

This paper presents a research on the comprehensibility of essays written by second-year university students who major in non-language departments. Its main aim is to determine how far an English native speaker rates a sentence as comprehensible, and whether this opinion is also shared by his nonnative colleague.

The population of this research were thirteen second-year students of Pharmacy and twenty-three second-year students majoring in Accounting. They were taking an English for Academic Purpose course at Universitas Ma Chung in Malang, Indonesia. On average, they were at the low-intermediate level of English proficiency. They were assigned to write a 400-word essay about the importance of their majors for society. This topic was determined because it supposedly stimulated the learners to produce written argumentative essays about something they were familiar with. The handwritten essays were produced in a classroom session lasting one and a half hour. The purpose of having them write the essays during a class session was to make them present their original writing skill unaided by people outside the class or any extra resources like Google, dictionaries, and the like.

A stratified random sampling was done to obtain male and female learners in the same proportion as the proportion that made up the whole population. This step generated 9 essays written by 1 male and 8 female students of Pharmacy, and 14 essays written by 9 female students and 5 male students of Accounting. There were 185 sentences written by accounting students and 50 sentences by Pharmacy students. All of the sentences were submitted for rating by one non-native speaker who was highly proficient in English, and one native speaker of American nationality. Both were lecturers at the English Letters Department of Universitas Ma Chung. The index of inter rater reliability of the rating was found to be 0.63, a somewhat low

index which could probably have been higher if a more intensive training for rating had been held prior to scoring.

A brief primary-trait scoring rubric was made to guide the two raters in their rating. The design of the rubric followed a guideline by Llach (2011: 57) who stated that in a primary-trait scoring, "a particular aspect of the writing task . . . is made prominent, and a detailed scoring rubric . . . for that trait is designed against which writing performance is assessed". The number of scores was determined following Hyland's (2003) suggestion that a typical rubric consists of 4 to 6 levels. With the grammaticality and comprehensibility being designated as the primary traits, the rubric was intended to focus the two raters on those two aspects of the sentences:

Table 1. The Scoring Rubric

Score	Description
4	Perfect grammatical and comprehensible sentences.
3	Minor mistake that hardly interferes with meaning; readers can still understand the message.
2	Mistakes that although do not affect comprehension severely can potentially cause misunderstanding on the part of the readers.
1	Severe mistakes which make the meaning totally incomprehensible.

Findings and Discussion

The table below shows the result of the rating by the two raters:

Table 2. The Result of the Rating

	Accounting	Pharmacy
Grammatical and comprehensible	58.91%	72%
Containing small mistakes that do not interfere with meaning	14.59%	14%
Containing mistakes that potentially hamper understanding	7.57%	12%
Totally incomprehensible due to severe mistakes	18.91%	2%

In rating the sentences by Accounting students, both raters agreed that 18.91% (35 sentences) were severely flawed and thus incomprehensible; as many as 7.57% (14 sentences) contained mistakes that potentially could cause misunderstanding; as many as 14.59% (27 sentences) had minor mistakes that hardly interfered with meanings, and finally 58.91% (109 sentences) were perfectly grammatical and thus very comprehensible.

In rating the sentences by Pharmacy students, both raters agreed that only 2% (1 sentence) were severely flawed and thus incomprehensible; as many as 12% (6 sentences) contained mistakes that potentially could cause misunderstanding; as many as 14% (7 sentences) had minor mistakes that hardly interfered with meanings, and finally 72% (36 sentences) were perfectly grammatical and thus very comprehensible.

The issue of comprehensibility dates as far as the 1970s. Healy and Miller (1971) argued that sentences with verbs deleted were regarded as not acceptable but still deemed comprehensible, as were sentences without nouns but whether this holds true in my study remains to be seen.

The first point to be discussed is the types of sentences that both raters deemed understandable but potentially incomprehensible due to some slight mistakes. The following table displays these kinds of sentences:

Table 3. Potentially Incomprehensible Sentences

No	Sentences	Mistakes
1.	Many office very need accountan public for work	Wrong word order in compound noun ("accountan public"); missing intensifier "much" after "very"
2.	So, it is important to learn or study about accounting, because be accounting or public accounting is needed in many profession.	Wrong addition of verb *be*.
3.	In a modern life, example for the Accounting is make a decision, Accounting will be needed in every organization or factory to calculate data/money.	Comma splice.
4.	If we doesn't know a accounting in modern life, we cannot do anthing cannot earn money, but in another way we can earn money, like a chef, doctor, teacher.	Wrong auxiliary form; run-on sentence.
5.	Small company until big company needs accountant which having knowledge about	Wrong form of finite verb ("having") after

No	Sentences	Mistakes
	accounting to manage company's money, to make journals, and report it to the manager/CEO.	"which".
6.	Accounting is studied about financial, and make a financial report for a company or person	Wrong form of active sentence.
7.	Accountant very needed in the MEA.	Missing *be* and missing intensifier "much".
8.	Now many medicine which contain chemical ingredients with purpose to increase the speed of cure some disease.	Missing introductory "there are".

Incorrect use of *be*, as exemplified by sentence number 2 and number 7 above, is typical among learners whose native languages do not have such form as copula. Both raters thought that although the severity of this error would not obscure the intended message, its presence could affect the readers' comprehension. At least, when reading a sentence with this error, comprehension is halting due to the improper use of the verb *be.*

Instances of run-on sentences were frequent in the learners' essays, and both raters agreed that these kinds of mistakes, albeit not seriously grave, could potentially interfere with the messages. Sentence number 3 in the table above, for example, (*In a modern life, example for the Accounting is make a decision, Accounting will be needed in every organization or factory to calculate data/money*), while understandable, apparently required longer processing time due to long, unbroken strings of information which otherwise should have been segmented with a period. Longer sentences contain high number of propositions, and as such will tax the receiver's memory. If compounded by comma splices, this kind of sentence will quite possibly hamper comprehension. It is worrying to notice that this kind of errors was found to be frequent, too, in the subjects' essays written in their native language. If this is a commonplace error, attempts should be made to make the learners aware of them and to avoid making that flawed construction.

Errors in passive construction like sentence number 6 above are notoriously frequent among Indonesian learners. Several researchers have done studies that supported this common error. Kurniasih (2013) and Purnama (2014) found that misformation type of error, such as the missing *be*- verb and misformed past participle, accounted for 86.8% and 31.3% of all the passive sentences produced by Indonesian EFL learners. Although readers can usually recover the intended message from an ill-formed passive

construction, the possibility of the message getting lost is high. This seemed to be the opinion of both raters.

Linguistic distance also plays an influential role in the learners' errors. The greater the distance, the more likely learners of a particular language will experience difficulty when learning English (Chiswick and Miller, 2004). To learners whose native language comes from a family different from the Indo-Germanic, the distinction between finite and non-finite verb forms must constitute a daunting challenge. It is not surprising that they frequently confuse the two forms, as shown by sentence number 5 above (*Small company until big company needs accountant which having knowledge about accounting to manage company's money, to make journals, and report it to the manager/CEO*). Nevertheless, the two raters jointly agreed that this kind of error would still make comprehension possible although the possibility of slowing it down cannot be undermined.

A small error which could affect comprehensibility is the missing introductory "there", as shown by sentence number 8 above. The sentence should have been written *Now* ***there are*** *many medicines which contain chemical ingredients with* ***the*** *purpose to increase the speed of cure some disease*. Without that introductory form which serves to signal the existence of the noun, the whole sentence seems unfinished. Therefore, it is understandable why the two raters regarded this as potentially confusing to the readers.

Taken as a whole, both NS and NNS raters' judgment of those sentences supports Hoffman's (2013) opinion that lack of grammaticality may not necessarily cause lack of comprehensibility. Although a sentence does not conform to some grammar rules, if the entire context supplies enough information, comprehension will still be possible. This is in line with the view point of Chomsky, Bricmont and Frank (2013), who believe that some ungrammatical sentences may somehow still be acceptable. A more assertive claim was stated by Fetzer (2004), who maintained that grammaticality and comprehension are separate issues, with the former not necessarily affecting the latter. Rimmer (2006), argues that grammaticality judgment is a matter of probabilistic rather than a definitive issue. It explains why some sentence patterns are even contentious among native speakers. He argues that when it comes to judging grammaticality, even native speakers will have two kinds of different stance: referring to commonality of usage, and referring to rules. Hence, they could have different opinion as to whether a sentence is grammatical or not.

The following sentences by the learners were deemed incomprehensible by the two raters:

Table 4. Totally Incomprehensible Sentences

No	Sentences	Mistakes
1.	Which one for the tax.	Fragmented phrase.
2.	How to their tax to be clear, like they want.	Wrong complement of "how to".
3.	And it will give to direction.	Wrong collocation ("direction");
4.	So we can to make our asset and our cast out balance, maybe we can get benefit.	Mismatched markers of conditional sentence ("so" should not be followed by "maybe").
5.	Or, in the modern life, we must work, we can competition with someone else, not lose with someone else.	Wrong part of speech ("competition" should be "compete")
6.	In 2015 Indonesia as one of the country in Asian community.	Unfinished sentence.
7.	In conclusion, many problem in modern life, but we can finish 2 problem with accounting service.	Unfinished sentence; missing introductory "there are" before the subject "many problem".
8.	Pharmacys role for every people who get healthy with their medicine and pharmacys serve patient and make medicine for patient, and to help doctor and hospital in drug serving.	Confusing ideas due to many ideas connected with "and".

The errors displayed in the table above clearly were of global type, i.e. those that greatly affected comprehension. What follows below is a detailed description of each type of errors.

Both raters seemed to agree that sentences with omitted subjects were very incomprehensible. Case number 1 in the table above illustrates this. Psycholinguistically, it has been argued that S-V-O order corresponds well with the mind's ability to comprehend (Aaronson, 2013); thus, when one of them is missing, comprehensibility breaks down.

Case number 1 also exemplifies the detrimental effect of fragmented phrase on comprehensibility. It apparently was caused by the use of incorrect punctuation whereby a relative clause is separated by a period from the main clause, thus hanging loose without a connection to its main clause. This kind of construction seems to be typical of a spoken utterance that was written. While in a spoken form that kind of fragment would be unlikely to

cause comprehension breakdown, when it is written the confounding effect may be much greater. A similar explanation may also be offered for sentence number 3, whereby the word "and" is typically a connector in a spoken discourse.

Most errors which greatly affect comprehensibility stemmed from unfinished sentences, as shown by number 6 and 7 above. As a phrase, number 6 is grammatical; however, both raters agreed that this phrase is incomprehensible because it simply stands in isolation without any continuation or connection to the preceding idea. Number 7 seemed to fall into the category of incomprehensible because of a typical error among Indonesian EFL learners, i.e. it apparently misses the introductory "there are" before the subject phrase "many problem(s)".

Wrong part of speech, as demonstrated by number 5 above, was apparently another source of incomprehensibility. Because reading is essentially a process of sampling, selecting, and predicting, readers usually predict the structures in the incoming string of sentences (Goodman et al., 2003, p. 91). Thus, when reading a phrasal verb like "we can" the mind automatically expects to read a noun phrase as the complement of the verb. When what comes up is a noun rather than a verb, comprehension fails. It is understandable then that NS and NNS rate this kind of sentence entirely incomprehensible.

The findings in this section are similar to another finding by Sun (2014). As discussed above, he found that missing verbs and missing noun phrase as subject constituted major grammatical errors.

Error number 8 is probably what James (2013) classified as wrong lexical items that both NS and NNS find very difficult to understand. Being a string that is arranged more or less grammatically, sentence number 8 is nevertheless very difficult to understand. The source of the problem is not so much the order of the elements or the meanings of individual items as it is the aggregate meaning that results from the combination of those elements. As Gass and Selinker (2011) state in the above quotation, while faulty agreement or order of words still keep some meaning intact, inappropriate juxtaposition of words may obscure the messages completely. In addition to that, psycholinguistic studies have shown that sentences containing ideas connected with coordinator "and" need longer processing time than those with marker of causal relationship "because" (Noordman and Vonk, 2014). It is not surprising then that sentence number 8 above was rated

incomprehensible by both raters. They apparently were confounded by a chain of ideas in a single sentence being connected by "and".

The incomprehensibility caused by the errors above can also be discussed in the light of the Garden-Path theory that was briefly outlined in the beginning of this paper. The erroneous sentences above seemed to violate the principle of late closure. Their faulty constructions did not allow the readers to attach new words to the strings they currently process in a manner that generates meanings. In other words, the missing elements from the sentences caused the readers to fail to perform a 'closure'. Unable to discern complete meaning from the strings, they understandably deemed the sentences totally incomprehensible.

Some errors that were identified in the students' essays were the types of errors that other researchers have also identified among Asian students. Heydari and Bagheri (2012) pointed out numerous research findings on error analysis which also include the absence of introductory 'there", missing *be* verb, and wrong forms of the passive voice. They state that the sources of these errors may be interlingual, or intralingual. It is believed that as learners progress from beginning to more advanced stage, the errors become increasingly intralingual. If this is the case, the students in my study here still have some time to improve their accuracy because they were still in the second semester and therefore have some more time during which they can improve the grammaticality and comprehensibility of their production.

Table 1 and Table 2 in the previous section also hint at a possibility that students from Pharmacy were better than students who majored in Accounting. The issue of students majoring in exact sciences fare better than those in humanities and social sciences has been widespread among language educators but has yet to be confirmed by thorough studies. To my knowledge, there has never been any studies that compare the two broad disciplines. A study that came close to this issue was done by Shaaban and Ghaith (2008), who concluded that in terms of English learning motivation, students from science majors did not differ from those majoring in social and humanities. It follows from here that the English proficiency of the two disciplines should not be very much different from each other, either.

Conclusion

The study looked into the comprehensibility of written sentences by Indonesian university students who were studying in non-language

departments. An English NS and a high-proficient NNS rated their sentences. They agreed to rate the following errors as making the sentences partially comprehensible: wrong word order, wrong addition of verb *be*, comma splice, run-on sentences, wrong forms of finite verbs, wrong active patterns, absence of *be,* and absence of introductory "there". They also regarded these following errors as the causes of totally incomprehensible messages: fragmented phrases, wrong collocations, mismatched markers of conditional relations, wrong parts of speech, unfinished sentence, and excessively long sentences joined only by a coordinator. Some of the errors are similar to the ones produced by other Asian students.

This study is not without limitations. First of all, no intensive training was done to assure the two raters' more or less uniform judgment of the sentences. Had training been held, the inter-rater reliability would have been higher than what is reported in this paper. Second, a confirmation to the raters about what actually causes partial or total incomprehensibility was not done. Nevertheless, the findings should somehow provide a more or less informative profile of written mistakes by learners from non-language departments.

Based on the findings, some suggestions could be offered for practical teaching. Teachers of vocabulary should see to it that the vocabulary lesson also raises the learners' awareness about collocational appropriateness because appropriate collocations may contribute greatly to readers' understanding. In the teaching of writing and grammar, the common concern about inaccurate tenses, articles, quantifies, and prepositions that have so far been common emphases should be replaced with a stronger focus on the construction of complete sentences, the use of commas and periods, parts of speech, and appropriate length of sentences that fosters comprehension. For further research, it is suggested that besides an intensive training of the raters, researchers also compare English production by learners from a more diverse majors.

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