

A Brief Analysis of Syntactical Features of English Virology Texts*

ZHANG Zhengqing, JIA Xiaoqing

University of Shanghai for Science and Technology, Shanghai, China

Ever since late 2019, the COVID pandemic has given the world a great deal of pain and financial loss. Virologists around the world are working hard to eradicate it. Vaccines and treatment methods have been found, which cannot be accomplished without the joint efforts of the world virologist community. Naturally, facilitating global communication would help advance the research. This paper analyzes syntactical features of English virology texts and finds that: In these texts, verbs and postpositive attributes are used frequently, complicated logic needs careful analysis, and personification is often used. Having some knowledge of these sentence features may contribute to better communication in the virology community.

Keywords: syntactical features, virology, cross-language communication

Introduction

Since late 2019, COVID has spread around the world and caused great loss everywhere. Business shuts down; jobs are lost. It is of vital importance for scientists around the world to find a cure for the problem as soon as possible. To achieve this goal, global cooperation is necessary. This paper is aimed at uncovering the syntactical features of English virology texts, which can be useful for facilitating communication on virology in English. Hence, we may contribute to the ongoing effort of cross-language cooperation in virology.

Upon investigating previous research on this subject, the authors used “virology” and “syntactical features” as keywords, but no related works turned out in Google Scholar and Bing Scholar. A wider search attempt at finding related information using Google and Bing also failed. Using professional academic search engines like Wiley also failed to find any researches on this subject, which shows that no study on syntactical features of English virology texts has been published.

Syntactical Features of Virology Texts

Virology texts often involve describing the structure of a certain virus and the pathology behind certain virus infections.

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ZHANG Zhengqing, undergraduate student, College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China.

JIA Xiaoqing, associate professor, College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China.

Densely Used Verbs

In these texts, the density of verbs is striking. This tendency of using verbs in the place of nouns is shown in the example below.

Example 1: It is believed that the Vpr protein is involved in the arrest of the cell cycle. This protein also enables the reverse transcribed DNA to gain access to the nucleus in non-dividing cells such as macrophages, a function that is performed by Vpx in HIV-2. Vpu is a protein necessary for the correct release of virus particle, whereas the Vif gene codes for a small protein (Vif) that enhances the infectiveness of progeny virus particles (Fanales-Belasio, Raimondo, Suligoi, & Buttà, 2010).

Example 2: Fusion proteins are anchored in the viral envelope through their transmembrane domains (TMDs) and bind to cell receptors via receptor-binding domains (RBDs) (Kubiszewski-Jakubiak & Worch, 2022).

In Examples 1 and 2, the underlined parts mark all the verbs used. In virology, besides the static description of virus structure, the description of how a virus infects, duplicates, and spreads shows dynamic processes that require the use of verbs about the behaviors of viruses.

Postpositive Attributes

Science emphasizes accuracy. Virus reproduction and duplication, and its interaction with cells are complicated processes that require a lot of clarification. In virology texts, postpositive attributes are used often.

Example 3: A coronavirus particle consists of four structural proteins: the nucleocapsid, envelope, membrane, and spike. The nucleocapsid forms the genetic core, encapsulated in a ball formed by the envelope and membrane proteins. The spike protein forms club-shaped protrusions that stick out all over the ball, resembling a crown or the sun's corona—hence the name. These protrusions bind to receptors on host cells, determining the cell types—and thus the range of species—that the virus can infect (Guardian Staff, 2020).

In the example above, three postpositive attributes are underlined. The first and the third attribute serve the purpose of supplementing critical information. Postpositive attributes can be seen in a lot of virology texts.

Complicated Logic

The logic in these texts is often complicated due to the intricate nature of virology.

Example 4: The maintenance of heterochromatin regions by RITS complexes has been described as a self-reinforcing feedback loop, in which RITS complexes stably bind the methylated histones of a heterochromatin region using the Chp1 protein and induce co-transcriptional degradation of any nascent messenger RNA (mRNA) transcripts, which are then used as RNA-dependent RNA polymerase substrates to replenish the complement of siRNA molecules to form more RITS complexes (Makin, 2020).

Example 5: There is a growing body of studies, which demonstrate that hydrophobic stretches of membrane proteins, which act as their TMD regions, have a function beyond the passive anchor they are usually associated with (Kubiszewski-Jakubiak & Worch, 2022).

In the examples given above, two clauses are used. In virology texts, such a sentence may appear more than a dozen times, which challenges the reader's ability to hold information in his or her mind. Upon researching more complex processes or ideas, an article may use such sentences in a row, making it harder for readers to understand the text.

Personification

To reduce the difficulty in understanding virus behaviors, viruses are often personified, to be described in a way that resembles human's behavior.

Example 6: Viruses all do basically the same thing: invade a cell and co-opt some of its components to make many copies of themselves, which then infect other cells. But RNA replication typically lacks the error-correction mechanisms cells employ when copying DNA, so RNA viruses make mistakes during replication (Makin, 2020).

In Example 6, “invade”, “co-opt”, and “make mistakes” are used to personify virus behaviors. The writer projected human behaviors onto the viruses to help the readers understand the behaviors of viruses. Through such a metaphor, readers have had a better mental picture of how the virus enters human beings and duplicates.

Example 7: Another important feature of coronaviruses is their “accessory” proteins, which appear to be involved in evading the host’s innate immune response—the body’s front line of defense (Makin, 2020).

“Accessory” in everyday English means “One who knowingly assists a lawbreaker in the commission of a crime but does not participate in that crime” (Editors of the American Heritage Dictionaries, hereafter AHD, 2011). Here, it is meant to say that except for the four proteins described in Example 3, other proteins that act as an “accessory” are also present. In this example, “accessory” is used in an extended sense rather than in its original sense. We can deduce by reading the non-restrictive attributive clause following the sentence that the protein in question is an accessory that helps the virus escape the immune response of the host.

Conclusion

In English virology texts, verbs are used frequently for viral activities which are continuous activities, which necessitates using verbs in a large amount. This brings a dynamic sense to the texts. However, when these verbs are used in large numbers, they may cause the readers to have difficulty understanding the intertwining logic involved in viral activities. Visualization and logical analysis might be very helpful in reading these types of sentences. By imagining the movements when reading the verbs, readers may form a mental picture of how viruses move and reproduce themselves.

The postpositive attributes are used frequently. As shown in Example 2, the postpositive attribute is used three times in a few lines. They may be easy for writers to use, because one does not need to go back and re-structure the sentence, but for readers, a repetitive postpositive attribute may interrupt their train of thought, resulting in decreased efficiency in comprehending the passage.

Complicated sentences are not uncommon in virology texts since virology is a serious science discipline that emphasizes precision and is intricate. From a linguistic point of view, complicated sentences may cause trouble for those who are not fluent in English and may harm cross-language communication as non-English speakers struggle to analyze and understand complicated sentences. One may dissect complicated sentences into clauses and analyze the logic linking them into a whole to help with understanding.

Personification is often used in virology texts to help follow or understand viral behaviors.

A clear knowledge of sentence features can be helpful for anyone trying to work in English on virology topics. It can act as a guide for reading or writing virology texts, helping virologists to write and talk in an accepted way, and enabling a faster understanding of related contents and new ideas.

References

- Editors of the American Heritage Dictionaries. (2011). *The American heritage dictionary of the English language* (5th ed.). New York: Collins Reference.
- Fanale-Belasio, E., Raimondo, M., Suligoi, B., & Buttà S. (2010). HIV virology and pathogenetic mechanisms of infection: A brief overview. *Ann Ist Super Sanit* 46(1), 5-14.

- Guardian Staff. (2020). Understanding the corona virus. *Guardian*. Retrieved from <https://guardian.bz/?p=23672> (Accessed on 18 Apr. 2022)
- Kubiszewski-Jakubiak, S., & Worch, R. (2022). Unique properties of coronaviridae single-pass transmembrane domain regions as an adaptation to diverse membrane systems. *Virology*, 570, 1-8.
- Makin, S. (2020). How coronaviruses cause infection—From colds to deadly pneumonia. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/how-coronaviruses-cause-infection-from-colds-to-deadly-pneumonia1/> (Accessed on 18 Apr. 2022)