Proceedings of the 2nd International Conference on Social Psychology and Humanity Studies
DOI: 10.54254/2753-7048/42/20240840

How Does Language Influence Our Minds? From a Linguistics Perspective

Andy Lingxi Mei[1,a,*]

[1]*Dougherty Valley High School, 10550 Albion Rd, San Ramon 94582, USA*
a. 207145@students.srvusd.net
**corresponding author*

Abstract: The Sapir-Whorf hypothesis, which was first proposed by linguists Edward Sapir and Benjamin Lee Whorf in the early 20th century, is currently the most widely accepted theory of neurolinguistics. It makes the argument that language influences cognition and perception, i.e., that people's basic worldviews vary depending on the language they use. Their hypothesis, sometimes referred to as "linguistic relativity," contends that a language's lexicon and structure affect perception. This claim has been disputed on a number of different grounds.Specifically, the hypothesis is composed of two different parts called “Linguistic Diversity” and “Linguistic Influence on Thought,” which argue that languages have fundamental differences from each other and that the differences between individual languages create cognitive differences within people. With regards to the latter cognitive section of the theory, there are two key tiers that it is divided into. The first tier proposes a universal "rock bottom" of human consciousness, where everyone must share a basic level of perception. The second tier delves into the semantic details of various languages, asserting that these linguistic nuances contribute to different interpretations layered atop the universal foundation. Moreover, the Sapir-Whorf hypothesis has been even further bisected into two distinct versions depending on how strongly they convey the idea of linguistic relativity, with a strong version arguing that native language completely alters our perspective and a weak version that only suggests a weak connection between the two.

Keywords: Sapir-Whorf hypothesis, Linguistic relativity, Linguistics

1. Introduction

One of the main regions of discussion surrounding the idea of linguistic relativity is in color perception, which concerns the classification of different colors under certain categories based on linguistic rules and the usage of different terms [1-2]. While competing theories contend that language conventions and classifications have no bearing on how one perceives a hue, the Sapir-Whorf theory bases its conclusions on the idea that a person's perception of a particular color depends on its classification [3]. For instance, according to the Sapir-Whorf theory, a human could only recognize two hues of green as "green" if they were placed next to one other because the categorical term "green" exists. When this was tested, however, the empirical data showed that there was only a partial correlation between the recognition of a category of color and the recognition of the linguistic term for that color. In an investigation conducted by Terry Regier, professor of Psychology at University of Chicago, and Paul Kay, professor of Linguistics at University of California, Berkeley, it was found

DOI: 10.54254/2753-7048/42/20240840

that the Sapir-Whorf hypothesis was only half correct. Rather than language categories for color supporting the identification of colors through quicker and more accurate discrimination of stimuli, Regier and Kay propose that language might affect only half of perception. This idea stems from the dominance of the left hemisphere of the brain for language and the contralateral projection of visual fields. The hypothesis suggests that language may primarily shape perception in the right visual field while having less or no impact on the left visual field. In this way, half of our perceptual world could be influenced by our native language, while the other half is experienced without a linguistic filter [3].

Another piece of evidence emerging in support of the Sapir-Whorf hypothesis concerns the Theory of Mind, which is the theory that one can recognize another person's desires as separate from their own. Recent research from Frank Kobayashi in 2010 on the relationship between Theory of Mind (ToM) and language has indicated a moderate influence of language on ToM. Behavioral studies, particularly those utilizing the false-belief task such as the "Sally-Anne" task, have provided insights into ToM development in typically and atypically developing children. The classic notion of a clear-cut temporal sequence between language and ToM development is challenged by the linguistic determinism hypothesis, which suggests a relationship between language proficiency and performance on false-belief tests. Furthermore, neurological evidence—such as brain imaging tests and case studies of aphasic patients—emphasizes the intricate relationship between language and theory of mind, with pragmatic features of language having a major developmental impact on ToM. The review also highlights the pragmatic and cultural aspects of Theory of Mind (ToM), emphasizing the need for more studies to carefully investigate the ways in which pragmatic and cultural factors influence ToM, especially in cross-linguistic and cross-cultural contexts. This piece of research underscores the intricate relationship between language and cognition, showing how language has deep-rooted connections in how people form their perceptions of the world, such as with the Theory of Mind.

2. Emerging Theories

Despite the deep-rooted influence of the Sapir-Whorf hypothesis on the study of neurolinguistics, the past decade has witnessed the emergence of alternative theories that have gained prominence. One such theory, the Language of Thought Hypothesis, articulated by Rescorla in 2023, introduces the intriguing concept of "mentalese." According to this theory, the human mind has an internal language that functions apart from language used outside of it. Rescorla claims that this mental language is essential to giving words meaning and to putting conceptual pieces together to form cohesive ideas and sentences. In light of this, the study of propositional attitudes assumes particular significance. Deeply embedded in the field of neurolinguistics, folk psychology frequently uses mental states—beliefs, desires, intents, fears, and hopes—to explain and forecast behavior. These mental states, referred to as propositional attitudes, demonstrate intentionality because they are focused on a particular topic. The term "propositional attitude" traces its origins to Russell and aligns with the idea that these attitudes are relations to propositions. Fodor's representational theory of thought (RTT) further delves into propositional attitudes, assigning a central role to mental representations. According to RTT, mental representations are repeatable types instantiated by mental events, forming the objects of propositional attitudes and the domain of thought processes. This perspective, enriched by insights from neurolinguistics, bridges the gap between the external expression of language and the internal cognitive structures, contributing to a more nuanced understanding of the intricate interplay between language and thought [4].

Historically, the Sapir-Whorf hypothesis has also faced challenges from prominent linguists, notably Leonard Bloomfield and Noam Chomsky. Bloomfield's rigid worldview, marked by an emphasis on language development through behavioral psychology, imposed significant limitations

DOI: 10.54254/2753-7048/42/20240840

on the scope of linguistic analysis. His pursuit of establishing linguistics as a science was characterized by a narrowly defined approach aligned with the behaviorist psychology of his time. This method has drawn criticism for being very limiting since it relies heavily on segmentation and classification according to formal criteria, as it is embedded in a descriptive framework. When employed on diverse languages, such as American Indian dialects, Bloomfield's approach frequently oversimplified intricate linguistic concepts. Some argue that his steadfast adherence to behaviorist ideas impeded the advancement of more complex and all-encompassing linguistic theories. Bloomfield's influence is further diminished by the contentious character of his ideas, which include ordered norms of realization and abstract underlying forms, in addition to methodological flaws. These concepts, which were presented as going beyond behaviorist principles, have been judged to be complex and devoid of scientific evidence [5].

Bloomfield's rigid and behaviorist-oriented approach to linguistics had a profound impact on the Sapir-Whorf hypothesis, which posits a relationship between language and thought. The Sapir-Whorf hypothesis suggests that the structure and features of a language shape and influence the way its speakers perceive and think about the world. However, Bloomfield's strict adherence to behaviorist principles and his emphasis on a highly formalized and segmented descriptive framework limited the consideration of more complex and nuanced linguistic phenomena within the Sapir-Whorf framework. Bloomfield's methodology, focused on the observable and measurable aspects of language, often dismissed the subtleties and intricacies of linguistic expression that the Sapir-Whorf hypothesis aimed to explore. In its extreme version of linguistic determinism, the Sapir-Whorf hypothesis postulates that language both shapes and dictates cognition. The examination of the complex interaction between language and cognition in the Sapir-Whorf hypothesis ran counter to Bloomfield's strict behaviorism and formal requirements for linguistic analysis. Detractors contend that Bloomfield's impact aided in the mainstream linguistic community's contemptuous view of the Sapir-Whorf theory. More subtle and indirect ways of considering language's role in molding mind were impeded by the rejection of abstract abstractions like linguistic relativity (Sapir and Whorf) and the stress on observable behavior [6]. Bloomfield's legacy, marked by a rejection of internal cognitive processes in favor of observable behavior, created a disciplinary environment that marginalized the exploration of the Sapir-Whorf hypothesis. In contrast to the Sapir-Whorf hypothesis's exploration of linguistic diversity and its impact on thought patterns, Bloomfield's approach led to a more homogenized and behavior-focused perspective within linguistics. The nuances of linguistic relativity proposed by Sapir and Whorf, suggesting a deep connection between language, culture, and cognition, faced resistance in a discipline influenced by Bloomfield's strict and formalized methodology. Consequently, the Sapir-Whorf hypothesis struggled to find acceptance and recognition within the linguistic community shaped by Bloomfield's behaviorist paradigm.

On the other hand, Chomsky’s theories on language and thought posed a major challenge to the Sapir-Whorf hypothesis, as he posed that human language is not a mere reflection of) thought but is deeply rooted in an innate, universal grammar. Chomsky's critique of the Sapir-Whorf hypothesis was centered on the idea that linguistic relativity, as proposed by Sapir and Whorf, overemphasized the influence of language on shaping thought processes. Rather, Chomsky's theories proposed the existence of universal grammar, a set of inherent linguistic principles shared by all languages [6]. Chomsky argues that this universal grammar is not just formed by linguistic experiences, but also results from innate cognitive mechanisms. Chomsky's linguistic theories thus contend that language and thought are inextricably intertwined, independent of one another, and thus directly contradict the Sapir-Whorf hypothesis. In addition to challenging the behaviorist theories of language acquisition that were popular at the time, Chomsky's important theories offered an alternative framework for comprehending the connection between language and cognition. His research helped to create a more nuanced view by recognizing that language acquisition and innate cognitive structures both play a

DOI: 10.54254/2753-7048/42/20240840

part in the development of human language [7]. As a result, Chomsky's theories significantly influenced the direction of linguistic research, encouraging a deeper exploration of the intricate interplay between language, cognition, and the universal aspects of human linguistic capacity. Moreover, Chomsky's influence extended to shaping the broader landscape of linguistic research and cognitive science. His proposals regarding universal grammar provided a theoretical framework that has influenced diverse fields beyond linguistics, including psychology and philosophy [8].

3. Comparing Different Perspectives

Analyzing different views on language requires a solid framework, especially when looking at the differences between the Sapir-Whorf theory and newer ideas. The most important areas of discussion would be the differences between the Sapir-Whorf theory, which talks about how language shapes thought, and the newer perspectives that include cognitive and neuroscientific aspects. The first step in the study is to expose the underlying presumptions of each theory and identify the major ideas that influence how they approach neurolinguistics. Subsequently, a methodological approach is examined, taking into account the efficiency of each theory in capturing language subtleties. The analysis also looks at how each theory approaches the processing of meaning and sentence structure, and whether it emphasizes a single brain network or separate neural circuits. An examination of the theories' views on broad application and cross-cultural applicability is one more level of inquiry. Lastly, each theory's empirical foundation is reviewed, with an emphasis on the reliability and repeatability of study results [9].

The Sapir-Whorf hypothesis and the Language of Thought hypothesis represent two distinct perspectives on the relationship between language and cognition. Put simply, the Language of Thought hypothesis challenges the notion that language determines thought in the same way proposed by the Sapir-Whorf hypothesis. Fodor suggests that mentalese is independent of natural language and serves as a prelinguistic, innate cognitive system. ThiThe underlying, language-like structure of cognition that exists apart from external languages is highlighted by this viewpoint. Fodor's thesis suggests a degree of cognitive universality because it assumes all humans, regardless of linguistic variety, have the same mentalese system. The two theories differ significantly in that they place different emphasis on the role that language plays in forming cognition. The Language of Thought hypothesis asserts an intrinsic cognitive structure that exists before and beyond linguistic expression, in contrast to the Sapir-Whorf hypothesis, which highlights the impact of language on cognition and perception. This fundamental difference leads to distinct predictions and implications for understanding the nature of human cognition. In terms of empirical support, the Sapir-Whorf hypothesis has faced challenges in providing conclusive evidence for linguistic relativity. Experimental studies attempting to validate linguistic determinism have encountered methodological difficulties, and alternative explanations for observed linguistic effects on cognition have been proposed. The Language of Thought hypothesis, while influential in cognitive science, has also faced criticism, particularly regarding the nature of mentalese and the challenge of empirically verifying the existence of an innate, prelinguistic cognitive system. In conclusion, the Sapir-Whorf hypothesis and the Language of Thought hypothesis represent contrasting perspectives on the relationship between language and cognition. The Sapir-Whorf hypothesis, in its linguistic relativity form, suggests that language influences thought, while the Language of Thought hypothesis posits an innate mental language as the foundation of cognition. Both hypotheses have stimulated extensive debate and research, contributing to our ongoing exploration of the intricate interplay between language and thought in the human mind.

In addition to the Language of Thought Hypothesis, Noam Chomsky's idea of Universal Grammar offers an alternative perspective on neurolinguistics to that of Sapir-Whorf [10-12]. The Sapir-Whorf hypothesis highlights the significant influence of language in forming cognitive processes, whereas

DOI: 10.54254/2753-7048/42/20240840

Chomsky's Universal Grammar theory concentrates on the universal and innate features of human language, leading to essentially divergent perspectives. Their positions on linguistic determinism represent one significant distinction. The strong version of linguistic determinism, which asserts that language has a strict and direct influence on cognition, is rejected by Chomsky's theory of universal grammar. Chomsky advocates for a more accommodating theory in which a universal grammar that is shared by all people shapes the cognitive processes that underlie language use.

4. Conclusion

To sum up, this paper investigates the Sapir-Whorf theory, regarding its contribution to the linguistic field. Also, this paper compares the Spair-Whorf theory with Chomsky's theory of Universal Grammar, especially emphasizing on their major difference on linguistic determinism. While both perspectives acknowledge the significance of language in shaping cognitive abilities, they differ in the direction of influence and the role of innate structures. Furthermore, another area of distinction is the universality of grammatical structures. According to Chomsky's Universal Grammar hypothesis, there is a universal framework that all human languages have, and the differences between them are caused by the way these frameworks' parameters are adjusted. However, the Sapir-Whorf hypothesis permits the possibility that substantial differences in the grammatical structures of several languages influence thought in many ways. The Sapir-Whorf theory, on the other hand, proposes a more direct and restrictive influence of language on cognition, especially with regard to the strong linguistic determinism. The acquisition of language is another crucial area of difference. According to Chomsky's theory of Universal Grammar, language acquisition is facilitated by a biologically defined faculty of language.

References

[1] *Baghramian, Maria and J. Adam Carter, "Relativism", The Stanford Encyclopedia of Philosophy (Spring 2022 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/spr2022/entries/relativism/>.*

[2] *Regier, T., & Xu, Y. (2017). The Sapir-Whorf hypothesis and inference under uncertainty. WIREs Cognitive Science, 8(6). https://doi.org/10.1002/wcs.1440*

[3] *Regier, T., & Kay, P. (2009). Language, thought, and color: Whorf was half right. Trends in Cognitive Sciences, 13(10), 439–446. https://doi.org/10.1016/j.tics.2009.07.001*

[4] *Szabó, Zoltán Gendler, "Compositionality", The Stanford Encyclopedia of Philosophy (Fall 2022 Edition), Edward N. Zalta & Uri Nodelman (eds.), URL = <https://plato.stanford.edu/archives/fall2022/entries/compositionality/>.*

[5] *Bierwisch. (2001). Bloomfield, Léonard (1887–1949). ScienceDirect. https://www.sciencedirect.com/science/article/abs/pii/B0080430767002187*

[6] *Percival, K. (1966). A Reconsideration of Whorf's Hypothesis. Anthropological Linguistics, 8(8), 1–12. http://www.jstor.org/stable/30029443*

[7] *Poeppel, D. (2017, July 13). The Influence of Chomsky on the neuroscience of language (chapter 7) - The Cambridge Companion to Chomsky. Cambridge Core. https://www.cambridge.org/core/books/abs/cambridge-companion-to-chomsky/influence-of-chomsky-on-the-neuroscience-of-language/5ACE5B59DDFB6AB0425E0EB0CE632DA8*

[8] *Scholz, Barbara C., Francis Jeffry Pelletier, Geoffrey K. Pullum, and Ryan Nefdt, "Philosophy of Linguistics", The Stanford Encyclopedia of Philosophy (Fall 2023 Edition), Edward N. Zalta & Uri Nodelman (eds.), URL = <https://plato.stanford.edu/archives/fall2023/entries/linguistics/>.*

[9] *Rescorla, Michael, "The Language of Thought Hypothesis", The Stanford Encyclopedia of Philosophy (Winter 2023 Edition), Edward N. Zalta & Uri Nodelman (eds.), forthcoming URL = <https://plato.stanford.edu/archives/win2023/entries/language-thought/>.*

[10] *Menn, L. (n.d.). Neurolinguistics. Linguistic Society of America. Retrieved December 6, 2023, from https://www.linguisticsociety.org/resource/neurolinguistics*

[11] *Frank C. K. (2010). Linguistic effects on the neural basis of theory of mind. The open neuroimaging journal, 4, 37–45. https://doi.org/10.2174/1874440001004020037*

[12] *Currie, I. D. (1966). THE SAPIR-WHORF HYPOTHESIS: A PROBLEM IN THE SOCIOLOGY OF KNOWLEDGE. Berkeley Journal of Sociology, 11, 14–31. http://www.jstor.org/stable/42889010*