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QUESTIONING THE SAPIR-WHORF HYPOTHESIS

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Abstract

This project deals with the relationship between cognition and language and, in particular, with one of its most important theories: the Sapir-Whorf Hypothesis. This idea will be extensively analized with the help from the book *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf,* edited by John B. Carroll, and will be compared to my approach of it. If the Sapir-Whorf Hypothesis states that language either determines or influences the way an individual perceives reality, I believe it is the way a community perceive reality and its surrounding what shapes how the human being creates language. Most of the common examples usually given to reinforce this hypothesis will be used as to weaken it in this project.

Keywords: Sapir-Whorf Hypothesis; Language Determinism; Language Relativity

Sinopsis

Este proyecto trata sobre la relación entre mente y lenguaje y, en particular, con una de las teorías más importantes acerca de este tópico: la hipótesis de Sapir-Whorf. Esta idea será analizada de manera extensiva con ayuda del libro *Lenguaje, Pensamiento y Realidad: Selección de escritos de Benjamin Lee Whorf*, editado por John B. Carroll, y será comparada con mi manera de entenderla. Si la hipótesis de Sapir-Whorf dice que el lenguaje o bien determina o bien influencia la manera en la que un individuo percibe la realidad, yo creo que es la manera en la que una comunidad percibe la realidad y su entorno lo que influye en la manera en la que el ser humano crea el lenguaje. La mayoría de los ejemplos típicamente usados para fortalecer esta hipótesis serán usados para debilitarla a lo largo de este proyecto.

Palabras Clave: Hipótesis de Sapir-Whorf; Determinismo Lingüístico; Relatividad Lingüística

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Questioning the Sapir-Whorf Hypothesis

1. Background and introduction to the study

1.1. Cognitive Linguistcs

It is impossible to talk about theories such as the Sapir-Whorf Hypothesis without mentioning the scope to which they belong: Cognitive Linguistics. Vyvyan Evans and Melanie Green define it as "a modern school of linguistic thought that originally emerged in the early 1970s out of dissatisfaction with formal approaches to language." (24). It attempts to ilustrate the relationship between *cognitive processes* and *language*. By cognitive processes we should understand those processes that are related to thought, such as reasoning, interpretation, perception, etc.

In order to understand how this science emerged, the previous psychological model considered to be dominant should be taken into account: Behaviourism, which emerged in the late nineteenth century with the help of many important linguists such as Edward Thorndike, John B. Watson and B.F. Skinner. This approach dealt with observable behaviour and the notions of stimulus and response. Since Behaviourism did not take mental processes into account, some linguists thought it was not good enough, leading to the concept of *cognitivism*. Check the following image:

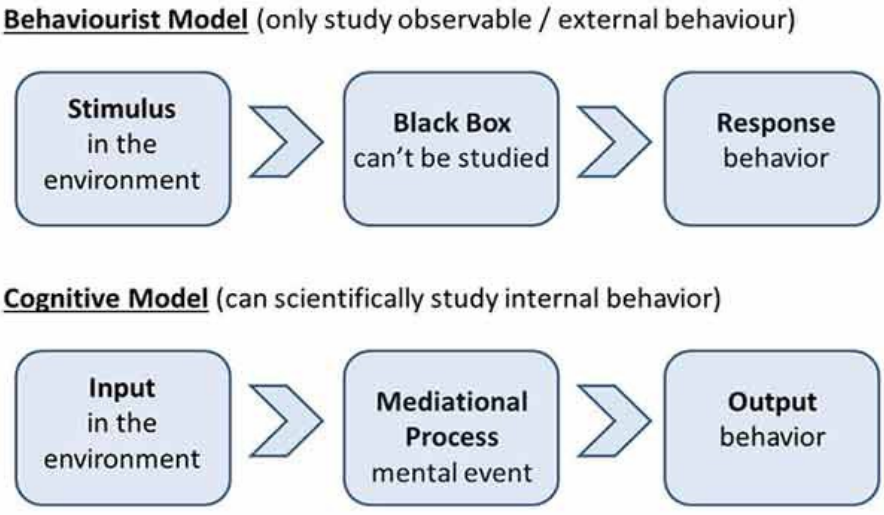


Illustration 1: Difference between Behaviourist Model and Cognitive Model

While Behaviorism approaches mental processes as a sort of black box, “cognitivism attempts to “peer into” the black box in order to describe mental processes.” (Joseph Hilferty, *English Cognitive Linguistics*, 5). In contrast to the Behaviorist paradigm, Cognitive Linguistics focused on meditational processes, the intermediate step previously not taken into account.

1.2. The Sapir-Whorf Hypothesis

Throughout the years, many cognitive linguists have tried to study the interrelationship between language and the brain. One of the most (if not the most) important theories regarding this topic is the Sapir-Whorf Hypothesis. Developed by Edward Sapir and Benjamin Lee Whorf (even though they never labelled it like that), this thesis attempts to analyze to what extent one's language may mold the way one perceives reality and the world. Particularly, it states, in its strong version, that language *determines* the way an individual thinks and perceives the world. Therefore, as an implication, every language, being different from any other, is capable to make their speakers perceive reality differently from other language speakers. In other words, being multilingual helps people have different personalities or different ways of thinking depending on the language being used. This idea has been labelled “Language Determinism” (Whorf, 1940).

However, at the same time, this idea has been agreed not to be true at all, leading to new hypotheses. All these new ideas came to be called “Language Relativity” (Whorf, 1940), which is still inside the Sapir-Whorf hypothesis, but as a weaker version. It states, in a very summarized version, that language just *influences* and not *determines* the way one thinks and remembers. This issue will be commented more in depth later in the project.

As stated before, most new adaptations are just weaker versions of the original one. Many linguists such as Ekkehart Malotki, Henry Gleitman, Earl Hunt or Franca Agnoli have already tried to question the hypothesis, by exposing its weak points. However, I will try to test it and introduce a

new approach to it: what if the real version did not have anything to do about weak-strong dichotomies but about understanding it the other way around? Does language influence the way we see reality? Or does reality influence the way we talk?

This project will be dealing with the comparison between how this thesis has always been interpreted and how *I* interpret it.

1.3. Project details

The first time I heard about the Sapir-Whorf hypothesis was on my second year of English Philology, on a second language acquisition subject. By the time I had to study it for the exam, I read about it several times and it was hard for me to comprehend it because, for some reason, I could only see it the other way around. However, I just decided not to go beyond and tried to understand it the way it had always been interpreted so I could pass the subject. Fortunatelly or not, the following year, this thesis was all around many different courses I took, such as Cognitive Linguistics, Contrastive Linguistics, Semantics, etc. making me realize how important this idea seemed to be. Being able to see it so many times made me, this time, "go beyond" and start seriously questioning it. Even though I was shown several different examples that apparently gave strength to the idea, for me, those examples just weakened the hypothesis.

In this project, I will try to carefully synthesize the points both Sapir and Whorf made, with a little help of the book *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf* himself, edited by John B. Carroll, among many other different sources that I found interesting, such as *Hopi Time* by Ekkehart Malotki in 1983, Judith Butler's *Gender Trouble* in 1990, etc. I will, then, try to question the idea that language determines/influences the way one perceives reality and, therefore, will finally introduce my thesis: it is *reality* and *the way we perceive the world* that may either influence or determine the way a community speaks, and not the other way around.

I will illustrate my position by analizing the main points made in the book mentioned above, followed by a couple of examples weakening them. I will finally try to come up with a little experiment which will try to reflect my ideas.

Note: Trying to state whether something is “right” or “wrong” in cognition studies is not an easy answer. There is no actual way of understanding how the brain works apart from performing tests, which may suggest a number of results. However, it is really hard to achieve a clear experiment resolution since such tests tend to be highly imprecise and a large amount of different points might indirectly influence on any result.

2. Literature review

2.1. *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf*

The main source I used to explore the Sapir-Whorf Hypothesis is a book called *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf*. This book deals with a compilation of writings by Whorf himself, in which he exposes his ideas on the realtionship between language and thought. As Stuart Chase summarizes in its foreword,

> We are thus introduced to a new principle of relativity, which holds that all observers are not held by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar or can in some way be calibrated" (5).

According to Chase, Whorf makes two cardinal hypotheses, which are going to be the main points to be explored/criticized in this project:

- On the one hand, that all higher levels of thinking are dependent on language.
- On the other hand, that the structure of the languge one habitually uses influences the manner in which one understands his environment. The picture of the universe shifts form tongue to tongue. (6)

Note that I am not going to criticize everything Whorf states, since there are points I agree with him too. For instance, regarding the first hypothesis used, I agree with the fact that language has been the tool for human beings to evolve. As Whorf comments, "We are thus able to distinguish thinking as the function which is to a large extent linguistic." (66).

I think that what has made the human being evolve more radically than other species is the fact that we have been capable of creating a complex form of communication. Language is the key for communication. Communication is the key for interaction. By interacting, we get to discover new things, be curious, understand other's feelings, and more important, we get to know each other's

needs, leading to a necessity for evolution. Language is the tool through which ideas are generated. Being able to create ideas means there is an inminent consequence: progress. And progress results into evolution.

However, this first hypothesis may also be understood as if the way we perceive the world depends on language. My idea is contrary to this: the way human beings perceive the world is not influenced by anything linguistically related but by the people's surroundings, culture, etc. Language, then, is just a way of expressing reality. This is related to the second and final hypothesis stated, which I also disagree with. Since, in my opinion, language does not influence on the way one sees the world, I don't think having the knowledge of different languages can make someone have “different identities” or perceive the world differently. These two points are going to be commented more in depth later throgout the many examples given in the project.

One of the things that got my attention as I started reading the book was that Whorf “trained for chemical engineering at M.I.T., and thus acquired a laboratory approach and frame of reference.” (8). This may not mean anything in particular but the fact that he had a more scientific perspective apart from the linguistic one, which may be helpful to understand different points of view. However, as I was trying to test a linguistic hypothesis I felt was wrong, I felt surprised by the fact that its main representative was more involved in the science branch than in the linguistic one.

As I kept reading, I discovered that I was not the first one to think the way I do. The Greeks already did:

> The Greeks took it for granted that back of language was a universal, uncontamined essence of reason, shared by all men, at least by all thinkers. Words, they believed, were but the medium in which this deeper effulgence found expression, It followed that a line of thought expressed in any language could be translated without loss of meaning into any other language.” (vii)

Reading this paragraph made me feel more comfortable in the field, since I previously had no knowledge of other people thinking the way I do, and that provided me a feeling that I might have not being understaning something. Trying to re-define one of the most important theories of language and the brain was something I expected to be really challenging. But at the same time, realizing some people, such as the Greeks, already had this feeling is a step that made me feel that what I was trying to define was not as crazy as I thought it could be.

This idea, in contrast to what Whorf stated, shows that language is just the medium through which reality is expressed. Therefore, every utterance can be translated into any language, independently from the grammatical forms of such, without losing any meaning. Since reality is the same for everyone, every language is the same, structured differently.

3. Exemplifications

3.1. Hopi language controversy

Among the huge amount of examples Whorf used to prove his thesis, we find that of Hopi language. This language belongs to the Uto-Aztecan branch, and it is spoken by the Hopies, a community in the northeast of Arizona.

The controversy started in 1940, year when Whorf, as seen in the chapter *An american indian model of the universe* argued that Hopi language had no words, grammatical expressions or constructions to refer directly to what we call "time". As he stated:

> I find it gratuitous to assume that a Hopi who knows only the Hopi language and the cultural ideas of his own society has the same notions, often supposed to be intuitions, of time and space that we have, and that are generally assumed to be universal. (57)

This idea was pretty shocking when I first read it, since, in case of being true, it would revoke any possibility to define my thesis. The concept of time will always be a harsh topic to talk about. Time is something that we, as humans, can not see. It is nothing you can touch, smell, or anything related to other senses. Time is just a conception. The Cambridge English Dictionary defines it as "the indefinite continued progress of existence and events in the past, present, and future regarded as a whole.". However, we have the notion of what is from the past, the present and the future. What I will do in one year from today is now future, but it will be present next year, and past on the following.

Not being something capable to be captured by senses means time is an idea that has been carried exclusively through language, generation to generation. To accept that Hopi speakers have a different conception of time would mean that the linguistic words defining it have never reached

them, affecting on the way they perceive the world.

Ekkehart Malotki, however, wrote *Hopi Time. A Linguistic Analysis of the Temporal Concepts in the Hopi Language* (1983), a study in which he tried to refute the idea Whorf wanted to state. Malotki specificied on Hopi language for more than ten years, reason why he wanted to test Whorf's hypothesis. As R. Pinxten stated in connection to his ideas, “Malotki decided to investigate this point thoroughly and thus to offer decisive information at least on this line of argument which was used in favour of linguistic relativism.” (540). Malotki eventually came out with a nearly seven hundred paged book full of evidences on how Hopi language speakers use the conception of time, from ethnolinguistic examples to terminological and idiomatic expressions, disrupting Whorf's previous ideas (Pinxten, 540).

Here are some examples Malotki gives:

Differentiation between 'this winter' and 'last winter' is accomplished by means of juxtaposting the particle *pu'* 'now' with *tömö'* in the former case (7) and adding the adverbial *nùutungk* 'last' in the latter (8).

(7)	*pu'*	*tömö'*	*tse-tsle-t*	*qa*	*suu-s*	*tiiva*
	now	in	RDP-social-PL	NEG one-times		dance
		winter	dancer	several times		PL

'This winter the social dancers danced several times.'

(8)	*pu'*	*nùutungk*	*tömö'*	*qa*	*nuva-ti*
	now	last	in	NEG	snow-R
			winter		

'This last winter there was no snow.' (373-374)

In its conclusion, Malotki clarifies that European languages and Hopi have different ways of express time but “that referene to time is amply present in the Hopi lexicon” (540). Pinxten comments on the lack of theoretical and philosophical approach Malotki had in his work, which is way simpler and less attractive than that of Whorf. He believes Malotki's work is so good in terms of helping American Indian lexicographers, because Hopi language is now fully studied. However, Malotki did not try and relate his study with the idea of language relativity; he just provided other linguistis with some data so as to test the hypothesis.

3.2. Different languages, different realities?

One of the points sustained by Sapir and Whorf was that since all languages are different from each other, they can make their speakers perceive different realities. One of the examples that is usually used to reinforce the Sapir-Whorf Hypothesis is that of Eskimo language. This language is spoken mainly in places such as Alaska, Canadian Artic, Siberia, etc. and is said to have about 100 different words referring to different types of snow, describing shape, form, location etc. (even though this has been questioned as a fallacy). In comparison, there are not that many terms in languages such as English or Spanish.

Franz Boas (1911) was the first person to note that Eskimos had four different roots for snow: *aput* (snow on the ground), *qana* (falling snow), *piqsirpoq* (drifting snow), and *qimuqsuq* (a snow drift). As Laura Martin comments on *“Eskimo Words for Snow”: A Case Study in the Genesis and Decay of an Anthropological Example*, “The example became inextricably identified with Benjamin Whorf through the popularity of “Science and Linguistics,” his 1940 article explorin the same ideas that interested Boas, lexical elaboration not chief among them.”(418)

Eskimo is an agglutinating language, which means the speakers of such language can get a root and add several amounts of affixes and modifiers and, as a consequence, easily create a huge number of words.

According to the Sapir-Whorf hypothesis, Spanish or English people (for instance) would not be able to differentiate between these types of snow. It is when you learn that language and particularly those terms that you become capable to distinguish between them. By having those terms, Eskimo speakers can see reality different, and, in this case, can clearly see the difference between those types of snow.

As stated above, Eskimo language is spoken mainly in places such as Alaska, Canadian Artic, Siberia, etc. It should be considered the fact that there was a particular moment in the past in which these terms were not created yet. The places in which this language is spoken are known because of the huge amount of snow they are always covered by. In comparison to in Spain, for instance, we could say here it hardly ever snows. According to this, snow in such places is something that, in one way or another, is always present in daily live conversations. In my opinion, after being everyday covered by snow, the speakers from this community can develop the ability to distinguish between different types of snow more easily than people who don't have the necessity to do so. If we apply logic, it is a bit pointless to say “It is snowing” in a place where it snows everyday. The speakers of these countries will end up going beyond that: they will create different terms to refer to different types of snow.

For instance, the words “tlamo” and “tlatim” refer, respectively, to “snow that falls in large wet flakes”, on the one hand, and “in small flakes” on the other hand. Eskimo speakers have the necessity to refer to concepts more specific than simple “snow”. It becomes necessary to create certain terms such as “tlamo” in order to avoid saying “snow that falls in large wet flakes”. And they would probably have to refer to other different types of snow every single day. These terms are created to make language more economic, that is, make it easier for its speakers to communicate. It will always be easier to refer to a word which holds a whole meaning than to the meaning itself.

In a nutshell, Eskimo language speakers are capable to distinguish several different types of snow. However, this is something that doesn't have to do with language at all. It is not that since they have such terms they become capable to do so, it is more a matter of, in this case, get used to witness it every day. That is why in countries such as Spain, for instance, we don't have such terms. As Spanish speakers, we don't have the necessity of creating those terms if snow is something that we barely see in our lives.

However, if now, for X reasons, the climate changed drastically and snow was something that became regular in every day life, we would eventually be able to distinguish between different types of it, therefore, create new terms. If words are created it is because there is a need. If there is a need, there is a difference between two aspects of reality, easier or harder to be visible, that has to be refered to as different terms. We create new vocabulary to adapt and to make language more economical, that is, to make it easier for us to communicate. Language, from my point of view, is just a way to express reality. First came facts, then language.

On the other hand, by analizing the examples “tlamo” and “tlatim” stated above, one can realize that the meaning of them can absolutely be understood even if there is no particular term for such concept in one's language. According to the Sapir-Whorf Hypothesis, if speakers don't have a specific term, there is no possibility to understand the concept. As Spanish/English speakers, we might not know what the word “tlapinti” means, but we can perfectly understand what “snow that falls quickly is”.

So according to this, as long as this term can be explained, Eskimo languages have the same number of ways of expressing different types of snow as English/Spanish do, however, the structure of some languages tend to allow to modifiy these expressions into single words. This is a clear example in which one of Whorf's ideas gets rejected. I believe every single language is capable of understanding the concept of any other language's utterance, since every word has a meaning,

which means it can be explained in other words. However, as with Eskimo, some languages might have the capacity to put different concepts together to form a word which can not be found in any other language.

3.3. Color categorization

One of the main topics usually used to reinforce the Sapir-Whorf hypothesis, is how different languages categorize colors. We tend to think, at first, that in order to learn other language's colors we just need to know the translation of each color in our L1. However, this is not true at all, because not every language does categorize them the same way. Yet, the color spectrum is the same for everyone.

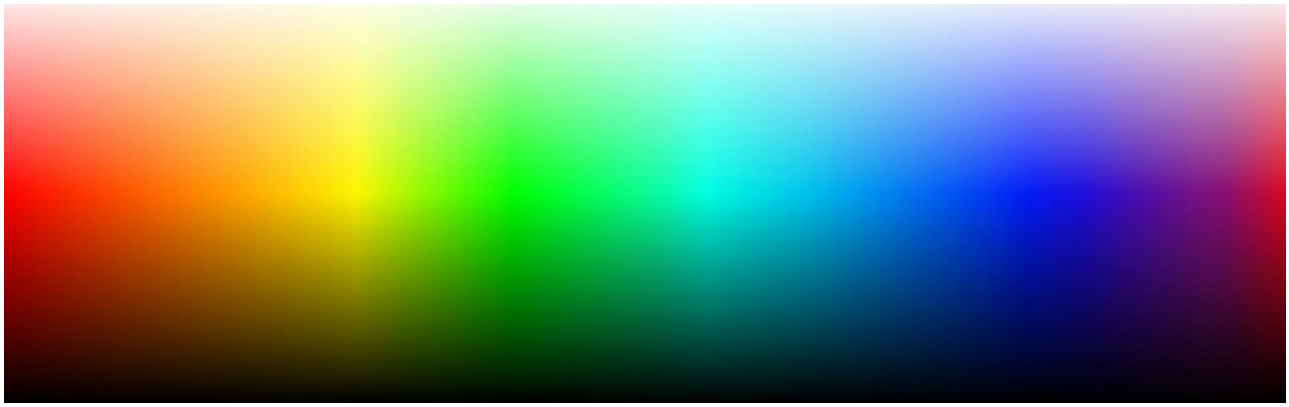


Illustration 2: Color spectrum

According to the Sapir-Whorf hypothesis, the fact of having terms for certain colors influences in the way we perceive them. What for some people might be different shades of a particular color, can be absolutely different colors for others.

Every language tends to categorize colors on the basis of focal colors, that is, those that are easier to recognize and are clearly distinguished from others. But, how can we actually know when a color is more focal than others? Can we define a clear boundary between different colors? Check the following image:

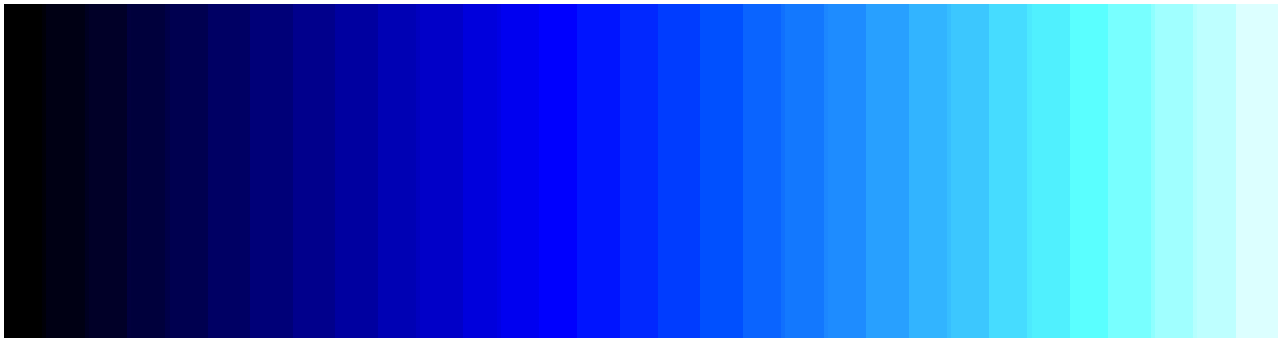


Illustration 3: Blue color spectrum

From the point of view of any English or Spanish speaker (among almost every other language), we would say these are different shades of blue. However, in other languages such as Russian, for instance, they have different names for dark blues ("siniy") and light blues ("goluboy"). That means that, for them, there were two different colors in the picture above. This assumption may feel weird for a Spanish/English speaker but, in fact, it is exactly the same as we do with colors "red" and "pink", which is merely a lighter version of red.

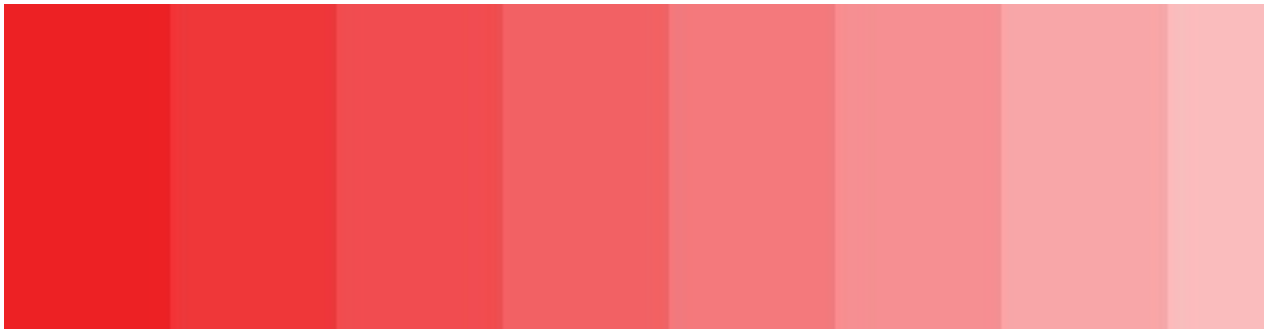


Illustration 4: Red color spectrum

The National Academy of Sciences of the United States of America (2007) once ran an experiment in which twenty-four English native speakers and twenty-six Russian native speakers from seven to twenty-one years old participated, related to this issue. The main objective of this experiment was to examine and study the different ways in which English and Russian speakers categorize colors.

This experiment was performed so as to test whether color naming affects or not on how people perceive them. Depending on the results, this experiment could be used either to reinforce the Sapir-Whorf hypothesis or to weaken it.

First of all, the English speakers were shown figure 1. After that, figure 1 disappeared and figure 2 and 3 appeared.

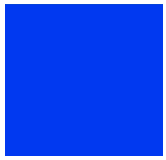


Figure 1

Figure 2

Figure 3

The goal was for them to identify which one of the two matched the previous stimulus, as fast as they could. Then they were shown figure 4, and had to do the same with figure 5 and 6.

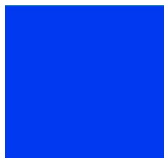


Figure 4

Figure 5

Figure 6

According to this experiment, the time of reaction for English speakers was the same in both cases. However, Russian speakers were subjected to the same experiment, showing that on the second case, they were faster to recognize it than on the first one. What this experiment wants to show, according to the Sapir-Whorf hypothesis, is that in the second case, as for Russian speakers those were different colors (one light and one dark), therefore, they have different terms to refer to them,

it was easier for them to distinguish between them than on the first case, were both figures were shades of the same color. According to this, it is thanks to the fact that they have different terms that they managed to distinguish between them more easily. According to Charles J. Lumsden, “The cultural patterns of information and learned behaviour in turn form an environment in which natural selection acts on genes, and a marked correlation between biology and culture is expected to exits.”(5805). Lumsden seems to be in favor of Whorf, since he believes the Russian speakers have lived in an environment in which what we understand as “light” and “dark” blue are completely different colors. This has made Russian speakers perceive reality in a different way in comparison to English/Spanish speakers. Since I found this experiment very interesting, I tried to do something similar.

4. The experimental study

4.1. Objectives and methodology

The fact that English speakers showed an equal reaction time in both cases seemed pretty unbeliavable to me, since it is easy to see that figures 2 and 3 are more similar between each other than 5 and 6. That is the main reason that motivated me to test the same experiment.

In order to do it properly, the perfect thing would have been if I have had both English/Spanish speakers on the one hand and Russian speakers on the other. Unfortunately, it was basically imposible to find any only-Russian speaker available; It was so hard because they only had to speak Russian and not any other language, because if don't, they would already have a knowledge on the fact that the different languages this person spoke, categorize blues differently.

However, since I realized that what Russian speakers do with blues is the same we Spanish/English speakers do with red and pink, something came to my mind. I chose 10 Spanish speakers between the ages of twenty to thirty, both male and female, so as to test the first part of the experiment. Participants were provided with the images and the time between the moment they were shown the pictures and the moment they chose their answer was calculated manually. The first thing I did was to do the same as the previously explained experiment, regarding blues. As I could not find the Russian part, later on I tried to do something similar playing with color red/pink. I showed them figure 7 and then 8 and 9.

Figure 7

Figure 8

Figure 9

Then 10 before 11 and 12.

Figure 10

Figure 11

Figure 12

4.2. Expectations

There are mainly two possible results: on the one hand, regarding blue color, I think the results can be different than what the original experiment showed. Even though for those people who were tested in my experiment those were shades of the same color, I think the reaction time will be slightly shorter in the case of figure 4,5 and 6 because they are still more different between each other than on cases 1,2 and 3.

However, I am not sure at all since the original experiment did not show this. In the case of red/pink, I think the reaction time will be shorter in the case of figure 10,11 and 12 such as the original experiment would have shown. However, and I will comment this more in depth if the results are as expected, it is not a matter of having these 2 colors belonging to different terms but on the proximity between them in the color spectrum.

4.3. Results

Blues

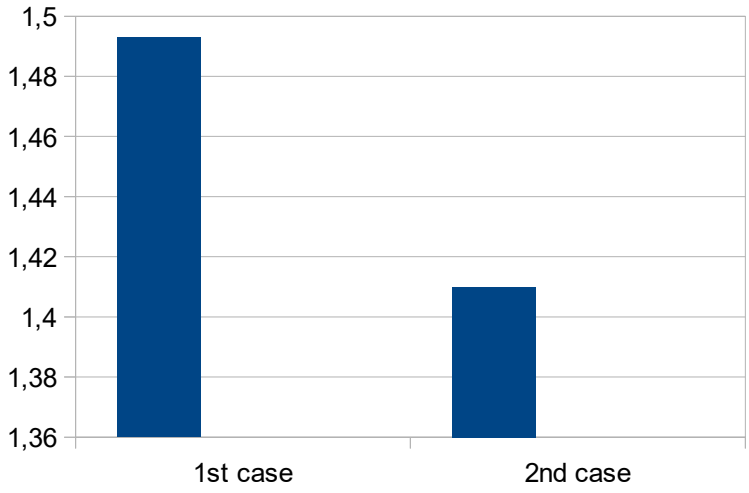
Reaction time 1st case (seconds): 1,21 / 1,7 / 1,62 / 1,09 / 1,05 / 2,07 / 1,33 / 1,41 / 1,9 / 1,55

Average time: 1,493 s

Reaction time 2nd case (seconds): 2,05 / 1,14 / 1,07 / 1,51 / 1,13 / 1,41 / 1,02 / 1,62 / 1,35 / 1,8

Average time: 1,41 s

Difference between 1st and 2nd case: 0,082 s



Difference in time (seconds) between blues

Reds/pinks

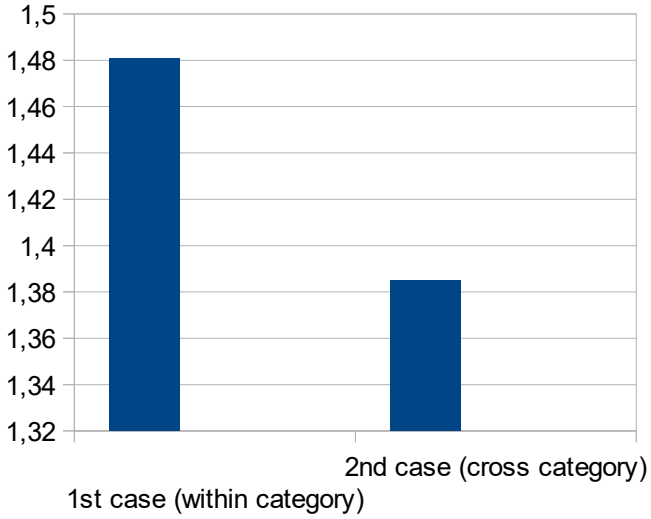
Reaction time 1st case (seconds): 1,55 / 1,72 / 1,32 / 1,91 / 1,97 / 2,03 / 1,32 / 1,61 / 1,43 / 1,77

Average time: 1,481 s

Reaction time 2nd case (seconds): 1,12 / 1,52 / 1,63 / 1,21 / 1,4 / 1,42 / 1,05 / 1,43 / 1,1 / 1,97

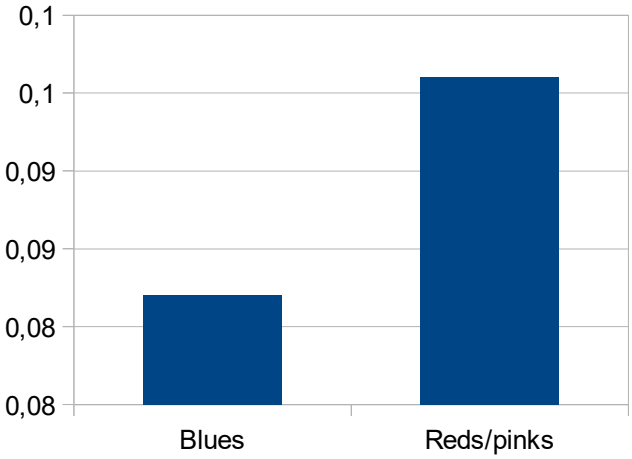
Average time: 1,385 s

Difference between 1st and 2nd case: 0,096 s



Difference in time (seconds) between reds/pinks

Difference of time between 2 different-categorized colors and 2 same-categorized ones: 0,014 s



Difference of time (seconds) between 2 same-categorized colors (blue) and 2 different-categorized ones (red/pink)

4.4. Analysis of the results

The original experiment stated that English speakers' reaction time was the same in both cases, but according to the experiment I tested, they were slightly faster when such colors were categorized differently for Russians (see figures 4,5,6). There should be no difference in time between English and Spanish speakers since both languages categorize colors the same way. Even though the difference in time obtained was so small (0,082 s), I think it should still be taken into account.

Now the interesting thing, though, is that when it came to reds/pinks, the amount of time was pretty similar to that in the case of blues. According to the original experiment, they should have been faster when one color was more likely to be a pink (12) and the other a red one because, for us,they belong to different categories. The reaction time was a bit faster then, but still the difference was on less than 0.1 seconds (0,014s to be exact). So, is it a matter of having different terms for such colors? Or is it a matter of being able to realize how far some colors are respectively in the spectrum?

As seen in the experiment, there is no need to have a term for different colors in order for people to be able to distinguish between them. In the case of blues, the participants were slightly faster when the two colors were more far in the spectrum, or in other words, were more different between each other. If the difference in time of reaction had increased in the case of reds/pinks we could have agreed that since we have a term for each, it is easy to see the difference faster. Unfortunately, we didn't find ourselves in this scenario.

The same happens on the Russian speakers experiment. It is not because they have a different term, it is because such colors are really far in the spectrum, which makes it easier for them to distinguish. Now we get to the same point: it is not that because we have different terms we are able to see them differently, it is because there is a difference between them, that we have created different terms for them. Even though we don't have such terms in English or Spanish, we are totally capable to

distinguish between them. We don't know the terms, but still, we know one is darker than the other, therefore, the human eye has the innate capacity of distinguishing if two colors are close or far between each other in the color spectrum.

4.5. Conclusion of the experiment

To conclude this experiment, on the one hand, every language has its own way of categorizing colors, basing them on focal colors. However, there are some times in which it is hard to tell whether a color belongs to one focal color or to another.

On the other hand, if we compare two colors at the same time, there is no need to have a term for both in order to know that they can be different. Both can be shades of the same focal color but our mind is able to tell us that they are placed differently in the spectrum. That means that the closer these colors are in the spectrum, the harder it will be to distinguish between them, and the more distance there is between them, the easier it would be.

There was a little difference (0,014s) between blues (different shades of the same colour) and reds/pinks (we consider them different focal colours). However, it is really hard to know the reasons why this happenned, but in order to be even more precise I should have taken the non-target colours being at the same distance from the target ones on the spectrum. In other words, the light blue should have been at the same distance from the “regular” blue as the pink should have been from the “regular” red. As this difference of time was really miserable, I claim that having different terms for colors does not help us see them differently faster.

5. Limitations

Judith Butler wrote her highly succesful book *Gender Trouble* in 1990 and, later on, a second edition in 1999. Reading her thoughts made me realize that when I was analizing whether language influences the way we perceive the world, I was just focusing on physical reality, not taking into account abstract concepts.

In her book, Butler talks about the relationship between sex and gender. She talks about the classical assumption people tend to do that sex is biologically natural while gender is something socially constructed. She introduces the idea of gender as performative: that is, rather than being part of our nature, we act it out. Butler believes our definitions of masculinity and femininity are constructed rather than inherent within us. As she comments, "Gender is the repeated stylisation of the body, a set of repeated acts within a highly rigid regulatory frame that congeal over time to produce the appearance of substance"(9).

She also believes that our understanding of the biological differences between men and women are socially constructed as well. Therefore, both gender and sex are socially constructed. Butler thought that the fact of perceiving sex as something natural, is actually the perfect excuse to assign values, judgements etc. If we can categorize people depending on their sex, it will be easier to make stereotypes on how we have to act depending on our sex.

The typycal example to show this idea is the following: From the moment it is declared that a newborn is a girl, for instance, it is expected for her to act in a particular way. Even though this baby is not even capable of speaking and showing her "gender", it is assumed that she will act as the average girl, therefore, be feminine. What Butler asks people to do is to refuse to peform the way "our" gender asks us to do. If we do so, the concept of gender will end up being pointless and, eventually, it will cease to exist.

One of the interesting points Butler does in her book is how she uses the topic of language in relation to gender. She agrees with Monique Wittig, arguing that even the fact of naming body parts is a way of stereotyping, therefore, creating a difference. Language, therefore, "produces reality-effects that are eventually misperceived as facts" (115). In other words, naming the sexual organs of a man differently from those of a woman is a way of creating a boundary and, as a consequence, a difference.

Butler introduces the concept of the body with the following quote: "How are the contours of the body clearly marked as the taken-for-granted ground or surface upon which gender signification are inscribed, a mere facticity devoid of value, prior to significance?" (129). So, as I previously said, she feels that both gender and sex are two ways of stereotyping which are not natural. Therefore, "the body is itself a consequence of taboos that render that body discrete by virtue of its stable boundaries" (133).

I initially chose this book as an example of my thesis. Butler, as commented above, believes that not only gender is something socially constructed; She thought sex was too. She argues that every single body is different from each other, so why sould we focus on a simple male-female dichotomy?

I do not agree with this statement, since I believe there is an essential difference between men and women and it is of biological type, reason why there is a necessity to create the terms “men” and “women”. In order for reproduction to work, there is the necessity of having both, the sexual organs of a man and those of a woman. Both play their roles, and one depends on the other. In my opinion, creating the terms “men” and “women” was not to classify and create differences but to clarify the differences that already existed and make communication easier.

However, I realized something which I could not see when I started this project. When I wanted to question the Sapir-Whorf hypothesis, I believed it was the way one perceives reality what influences one's language. Yet, I was only focusing on physical reality; the reality that we can see, touch, etc. I did not realize that there are also other realities, such as abstract concepts, assumptions, etc, to which we have no certainty of, but we still believe.

I do agree with Butler in the assumption that gender is something socially constructed. But what does that mean? If something is socially constructed, it means that it is an idea that, for some reaon, was created, and through language, this idea has been transmitted from one generation to another. The idea of gender is nothing but that, an idea that was created through language, yet, most people in this world have believed, at least for once, that the ways in which men and women ought to behave are natural. There is no place inside a woman body, for instance, in which says she will have to act as the “weak sex”, yet people tend to believe so.

What I want to say is, if gender is something socially constructed, it means it has been created through language. In this case, language came before reality. This concept was created to stereotype on the way men and women are said to behave, but there is no physical evidence of this idea being found inside one's body. It is purely an assumption, created through language. So, in this case, language has influenced the way people perceive reality, as the Sapir-Whorf hypothesis states.

The same happens, for instance, with ideas such as religion. As an atheist, I believe nobody has ever witnessed the presence of God. Religion, for me, is based on a lie; a lie created through language. People have never seen God, yet, through the influence of the bible, a priest, etc, they have created the assumption that there exists a supreme force who created the world in which we live and controls everything. Language has made religious people perceive the manner in which the world works completely different from that of atheists.

I could continue to give more examples, such as the concept of “soul”, or any other kind of abstract, complex assumptions the human being tends to create. But in conclusion, these type of concepts are ideas that we have no certainty of, yet we believe. They are a mere creation of language, and they have the power to influence the way one perceives the world.

6. Conclusion

In conclusion, bringing back the thesis stated at the beginning of the project, can we say language influences the way we perceive reality?

On the one hand, most experiments tend to re-inforce the idea that it does, agreeing with the Sapir-Whorf hypothesis. However, so far we have seen a couple of examples that show that it may not. In the first example used, if Hopi speakers did not have any way of representing the conception of time, the Sapir-Whorf hypothesis would have proved itself right. However, as Ekkehart Malotki showed in *Hopi Time*, Hopi language does indeed have a huge amount of terms and expressions reffering to time. In the case of Eskimo language, it has been rejected the idea that without having a term, we can not understand a particular concept. Language is just a way to refer to reality, so people is not influenced by their language; people is influenced by their knowledge of the world, environment, culture etc. These social facts lead to the creation of words whenever there is a necessity (either more visible or not). These terms are created to make language economical, meaning that the speakers of a language that does not have a term for a particular thing are also capable to understand its concept. The important thing is that there are languages whose structures allow to get a series of concepts together in order to form a new single word (ex: Eskimo vs. English).

The color experiment helped us see that there is no need to have a term for a color in order to distinguish it from another. There was a very little difference between those that were focal colors in English and those that were not, but we will never know if this is due to the fact that there is a different term for them or not. The problem with the several different hypothesis that exist about the main relations between our brain and the language we use is that we will never be able to know if they are true or not. We can only test experiments which tend to be imprecise because several different external factors may always interference, so we eventually end up talking about hypotheses.

The way a community perceives the world is the reason why language is created. However, language can also influence on the way people comprehend how the world works. This objection to my theory was found in abstract concepts and assumptions such as “gender”, “religion”, etc. These are ideas that have been created through language, there is no certainty of the validity of them, and yet they have an influence on our perspective towards reality.

All this study was focused on analizing whether language influences the speaker's perception of the world or the other way around. As a conclusion, throghout all the research done, it seems to be that the answer stands in between. In most of the cases, language seems to be just a way to refer to reality. Therefore, language is created through reality, so it does not have the ability to influene one's perception because this perception was already established by reality. However, it has been proved that the human being has created certain terms and ideas through language which may not have a physical refference in reality. If there is no evidence of a physical representation of these concepts, it means that these concepts are actually nothing but language. And in this case, with the capacity to make changes in one's perception of reality.

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