ICT AS A RESEARCH TOOL: ANALYZING NEUROLINGUISTIC PROGRAMMING TECHNIQUES

LAS TIC COMO HERRAMIENTA DE INVESTIGACIÓN: ANALIZANDO LAS TÉCNICAS DE PROGRAMACIÓN NEUROLINGUÍSTICA

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ABSTRACT

In this research paper, we are going to analyze in depth the characteristic neurolinguistic programming tools and issues closely related and linked to their environment, development, use and social awareness, with the final aim to prove or disprove their veracity regarding the different types of learning embraced and indirectly affected by this discipline, as well as the idea itself that the direction of one's look (the direction in which the person focuses their eyes while talking with another, pointing to areas of the brain with specific known functions) either entails or not a reliable indication of whether someone is lying or telling the truth. The content of this paper consists in having put this hypothesis into practice and in an effort to test its results. Thus we have the ultimate goal of reaching a conclusion on the fact of whether neurolinguistic programming tools and their related elements are testable or not, refutable or not; as it is currently not substantiated or proven with tools,

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techniques and technologies that are considered measurable unlike other tools that have had the benefit of this test, such as, for example, Eye Tracking.

KEYWORDS: neurolinguistic programming – NLP – analysis – neurolinguistic programming tools – eye movement – learning type – lie detector.

RESUMEN

En el presente trabajo de investigación vamos a analizar en profundidad las herramientas características de Programación Neurolingüística y cuestiones íntimamente relacionadas y vinculadas a su entorno, desarrollo, uso y percepción social, con el objetivo último de demostrar o refutar su veracidad respecto a los diferentes tipos de aprendizaje que abarca esta disciplina y a los que afecta indirectamente, así como la idea misma de que la dirección de la mirada (la dirección en la que la persona enfoca los ojos mientras habla con otra, señalando a zonas del cerebro con funciones específicas conocidas) de una persona supone o no un indicativo fiable sobre si alguien miente o dice la verdad. El contenido del trabajo consiste en haber puesto en práctica esta hipótesis y en un esfuerzo por probar sus resultados. De este modo tenemos el objetivo último de alcanzar una conclusión sobre el hecho de si son comprobables o no, refutables o no las herramientas de Programación Neurolingüística y sus elementos asociados; ya que ésta actualmente no está fundamentada ni demostrada con herramientas, técnicas y tecnologías que sean consideradas medibles a diferencia de otras herramientas que si han contado con el beneficio de esta comprobación, como por ejemplo el *Eye Tracking*.

PALABRAS CLAVE: programación neurolingüística – PNL – análisis – herramientas de programación neurolingüística – movimiento ocular – tipo de aprendizaje – detector de mentiras.

AS TIC COMO FERRAMENTA DE PESQUISA: ANALISANDO AS TÉCNICAS DE PROGRAMAÇÃO NEUROLINGUÍSTICA

RESUMO

No presente trabalho de pesquisa vamos analisar em profundidade as ferramentas características da Programação Neurolinguística e as questões intimamente ligadas e vinculadas ao seu entorno, desenvolvimento, uso e percepção social, com o objetivo final de demonstrar ou refutar a sua veracidade respeito aos diferentes tipos de aprendizado que esta disciplina abarca e aos que são afetados indiretamente, assim como a própria ideia de que a direção do olhar (a direção na que a pessoa foca os olhos enquanto fala com outra, sinalizando as zonas do cérebro com funções específicas conhecidas) de uma pessoa supõe ou não um indicativo confiável sobre se alguém mente o diz a verdade. O conteúdo do trabalho se baseia na colocação em prática desta hipótese e no esforço por provar os seus resultados. Deste modo temos como objetivo final conseguir uma conclusão sobre o fato de serem comprováveis ou não, refutáveis ou não às ferramentas de Programação

Neurolinguística e os seus elementos associados; já que a mesma atualmente não está fundamentada nem demonstrada com ferramentas, técnicas e tecnologias que sejam consideradas mensuráveis a diferença de outras ferramentas que contam com o benefício da comprovação, como, por exemplo o *Eye Tracking.*

PALAVRAS CHAVE: programação neurolingüística – PNL – análise – ferramentas de programação neurolinguística – movimento ocular – tipo de aprendizado – detetor de mentiras.

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1. INTRODUCTION

We have all ever wondered if the person in front of us telling us anything was lying or telling us the truth. This is a question more important with the growing communication facilities, as pointed out by Lavilla Muñoz and Mesonero Izquierdo (2010) and expanded by Álvarez Flóres (2017) and Vazquez-Herrero, Negreira-Rey and Pereira-Fariña (2017). Staring at the eyes or sliding one's look to the left are gestures that are considered lie detectors and most people take for granted that they are true.

Learning to lie is something complex that can take time within the dynamic role of language in society (Manzano Díaz, Bravo Alvarado and García Lebroc, 2019) but there are tools that will help us realize if someone is lying to us, increasing the value of personal communication in a context of generalized digital lies such as that described by Bustos, De Santiago et al (2019) and before by Timoteo Álvarez (2007). One of those tools is Neurolinguistic Programming (hereinafter referred to as NLP). NLP can help create the right environment or physical environment, making the other person feel more comfortable and, most importantly, teaching us to project with gestures, not with words, a consciously predetermined image. So NLP promises that it can make a person influence another if he takes certain attitudes and positions that help him empathize.

NLP is based on the fact that, if we analyze verbal and nonverbal communication in a more detailed way, and using this information correctly, it can help us persuade the other person in any way -in line with what is contributed by Blanco Mallada (2009)-. This is feasible for some to the point of seeing Neurolinguistic Programming as a science (As defined by science Mestres Naval and Vives-Rego, 2016) and not just a tool that facilitates communication.

We will research the different types of learning that this discipline explains, and how the direction of a person's look in theory dictates whether someone is lying or telling the truth. That is, we will put this hypothesis into practice and test its results.

The purpose of this paper is to study and evaluate whether NLP really has a seemingly scientific basis that can be verified. Try to study whether the direction of one's look has any relation to telling the truth or not.

To consolidate our work, we will study different sources and studies that deal with this topic in depth and take the theory of NLP into practice through an experiment, in order to measure its reliability. This way we will reach a conclusion about whether the NLP tools are verifiable or refutable.

Next, we will proceed to specify the object and objectives of our research.

2. OBJECTIVES

As a general objective, we will study NLP thoroughly, trying to reach a relevant conclusion on its scientific or experiential / experimental basis and measure the reliability of NLP tools.

Regarding the specific objectives:
– Analyze the different fields in which it has been or is applied.
– Do research on the tools used to measure the capacity of NLP, depending on the field in which it is applied.
– Delve into its applications in a personal interview.
– The different visual directions to detect if a person is telling truth or is lying and so, later, to be able to put everything that has been analyzed into practice.

Once the aforementioned objectives have been achieved, we intend to obtain conclusions that, depending on their relevance to the analysis, will allow us to verify whether or not these tools are correct, in terms of reliability, verification/ corroboration or refutation.

3. METHODOLOGY

The methodology that we will carry out in order to demonstrate the effectiveness of Neurolinguistic Programming will be, on the one hand, qualitative, since a personal interview will be carried out (Annexes, in point 8) structured in relation to which learning method is predominant in that person (we will explain it below) and it will also be experiential, since an experiment will be carried out that tries to prove the truthfulness and reliability, in the aforementioned terms, of the NLP tools that are used in different fields.

The method will consist in, using as a visual support a video camera that will be placed in front of the subjects in the foreground, we will record their eye movement

when answering the interview questions in order to find out if the facts they say are true or not, that is, to be able to corroborate if, really using NLP tools, we can know if they are lying or telling the truth. In other words, we want to see if we can deduce whether they are lying or telling the truth according to their eye movements, or if, on the contrary, there is no relationship between the eye movement and the truthfulness of their words. This way, when it is recorded, it will record the eye movements and allow us to make revisions of the direction in which the look is directed at each moment of the session.

This system will be sufficiently complete and has the necessary characteristics to be able to detect, obtain and record changes in eye movement. It would be like using Eye-Tracking (except for differences and equipment, of course) to measure the movement and position of the eye relative to the head. It is used in research fields such as: neuroscience, psychology, marketing and advertising, information technology, product design ... (Hassan Montero and Herrero Solana, October 2007).

Eye-tracking is a tool which, after all, has demonstrable and measurable results containing statistical, quantifiable data, ultimately. However, unlike this technique, in NLP there is no tool as such that can measure its veracity. That is, everything that has been studied or described on how the direction of one's look demonstrates a lie is not substantiated or demonstrated, with tools, techniques and technologies that are measurable. And this is what has led us to begin researching and try to corroborate whether everything that has been written is scientifically grounded or not.
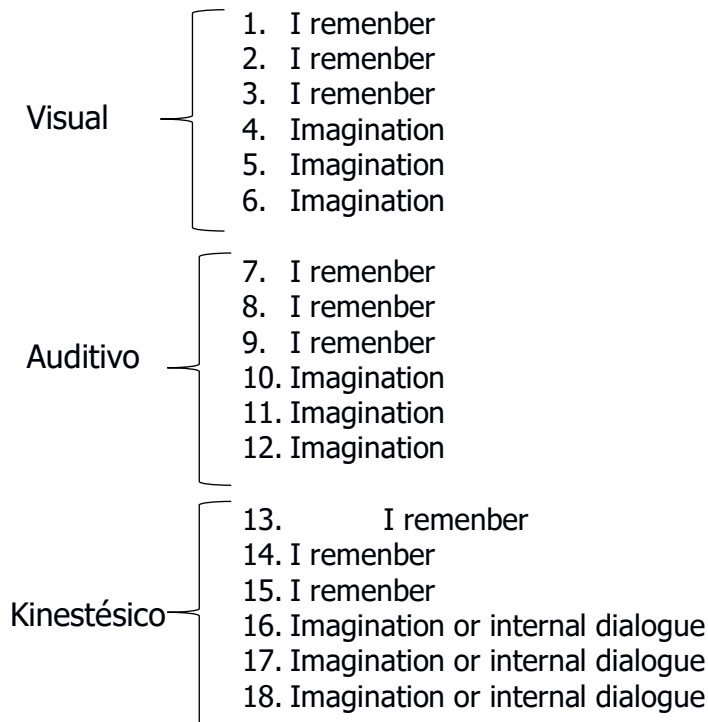
For the experiment, we will choose two reference subjects, one will proceed to answer the last more extensive questions (from question 19-21) telling only the truth, and the other will do exactly the opposite, answering with facts that are not true. Both will look to one side or the other (depending on whether they are lying or not) intentionally to be able to compare them with the rest, since they will simply stage the theory of NLP. Once these two recordings have been made, we will select another ten people who will answer the questions in order to analyze their eye movements and then be able to compare them with the reference ones. Out of the ten, five will answer telling the truth and the other five lying. This way, when contrasting the eye movement, it can be deduced that: if the person who participates repeats the pattern of the reference subject that is lying, he will also be doing it and vice versa.

In addition to carrying out the comparisons between the ten subjects and the two reference ones, we will have to take into account that it is also important to know what type of personality or learning style they have according to NLP (visual, auditory or kinesthetic). According to it, there are up to six visual directions, and each of them indicates something different. Basically depending on where the person is looking at, he may be creating (looking to the left) or remembering (looking to the right). In turn, these two directions are classified according to the type of person you are: visual, auditory or kinesthetic.

Coming to the topic that interests us, to know how to detect a lie, we must bear in mind that when you lie you do not rely on a memory, but the mind builds it. So, when someone lies, they always look to the left (Migallón, October 2011).

4. DISCUSSION

First, we will briefly remember the **methodology** to be used to corroborate the effectiveness of NLP tools. It is a structured interview *(Annexes,* in point 8*)* that consists of twenty-one questions that are divided into several groups. The first six try to force the use of the visual channel, the next six try to force the use of the auditory channel and the next six that follow these, try to force the use of the kinesthetic channel. Within each group of six, they will be divided into two parts: one (corresponding to the first three) that will try to have the respondent answer remembering and therefore in a truthful way (his look should be directed to the right), and the next three will try to have the respondent use his imagination (his look should be directed to the left). So the **interview** scheme is as follows:

Visual	1. I remenber
	2. I remenber
	3. I remenber
	4. Imagination
	5. Imagination
	6. Imagination
Auditivo	7. I remenber
	8. I remenber
	9. I remenber
	10. Imagination
	11. Imagination
	12. Imagination
Kinestésico	13. I remenber
	14. I remenber
	15. I remenber
	16. Imagination or internal dialogue
	17. Imagination or internal dialogue
	18. Imagination or internal dialogue

Scheme 1: *Meaning/organization of the interview.*
Source: self-made.

With these eighteen questions we will test whether: with the visual questions, the interviewed people really turn their look upwards; with the auditory ones, their field of vision is in the central zone; and with the kinesthetic ones, if the direction of the look is directed downwards, as NLP affirms.

Regarding the last three questions (from eighteen onwards), as they are more extensive questions, we will analyze their eye movement regarding whether they direct their look to the left, as seen on camera, or to the right. So, if the person looks to the

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left it means that they are using the imagination and therefore are lying; and if, on the contrary, they look to the right, it is that they are remembering some fact and therefore are telling the truth. Being open and more extensive questions, we will allow the interviewee to develop their predominant type of channel without conditioning.

Something to mention is that people do not only look all the time in the same direction, so it will be analyzed where the look tends to go depending on the question.

The **interview** will be conducted to twelve people, two out of whom will be the reference subjects. These two people will carry out the theory of NLP regarding the eye movement that they should make according to the type of question (visual upwards, auditory in the center and kinesthetic downwards), answering the questions in the most natural way they can. It will also be reflected that: reference subject 1 in the last three questions will respond by directing his look to the right, so he pretends to be telling the truth at all times; and reference subject 2 will tend to do it to the left, thus reflecting the opposite effect. This will help us compare their movements that represent the theory affirmed by NLP (both in the type of channel used according to what memories or type of imagination the subject uses, and how to detect a lie according to the direction of one's look) with those of the rest.

Of the remaining ten people, it should be said that five will answer by telling the truth and the other five by lying, and so we can compare their answers with those of the reference subjects. Therefore, when contrasting the eye movement, it can be deduced that: if the participant repeats the pattern of reference subject 2, who is the reference subject that lies, he will also be doing so and vice versa. Stressing that the source of elaboration of the questions is our own.

The profile of the people we have selected for the experiment is very broad and random, since variables such as sex or age do not change the results. This has been done as NLP affirms that the microexpressions mentioned above are universal and do not depend on the culture or country. Therefore, there are no socioeconomic, geographic, or psychographic or behavioral variables.

Even so, regarding the sociodemographic variables, we can say that: out of the twelve chosen people, four are men and eight are women (corresponding to 33.33% and 66.66% respectively); that the age range covered by the experiment is from 21 to 63 years, most of them being 21 to 25 years; and that the place of residence in all of the interviewees is Madrid, with the exception of two people.

Next, we will describe the study subjects and what their responses were in relation to their eye movement.

4.1. The reference subjects of the study

The reference subjects are two people chosen at random who will stage the actions that the other subjects should supposedly perform when answering the questions.

Their actions will be divided, like the interview, into two parts. **The first** is composed of the first eighteen questions, in which they must represent two things. On the one hand, eye movement in relation to the type of channel they should be using (visual, auditory or kinesthetic) depending on the type of question. And, on the other hand, the direction of the look in relation to whether it is a memory or an imaginative fact.

So, for both subjects, eye movement in the first part of the interview should be as follows:

Table 1. *Eye movement of the reference subjects.*

	MEMORY	IMAGINATION
VISUAL (above)	Looking up to the right.	Looking up to the left.
AUDITORY (central zone)	Looking to the center to the right.	Looking to the center to the left.
KINESTHETIC (down)	Looking down to the left.	Looking down to the right (internal dialogue)

Source: self-made.

The second part of the interview that covers the last three questions as we have already mentioned, reference subject 1 will respond by directing the look to the right, so the subject simulates being telling the truth at all times by using memories from his/her memory; and subject of reference 2 will tend to do so to the left, reflecting the opposite effect since he7she is using the imagination when developing an answer.

Knowing this, we are going to analyze the rest of the subjects that have been part of the study, the remaining ten, in order to draw conclusions that help us verify the reliability of NLP tools.

4.2. The rest of the study subjects

As in the previous point, we will structure the interviews in two parts. We will start with eye movement in relation to the channel the subject uses to express himself/herself (visual, auditory or kinesthetic) and then to verify the truthfulness in his/her answers depending on whether his/her eye movement tends to the left (he/she is lying in his/her responses) or right (whose answers will be true). This way, with the interview, we force the use of all channels and leave the last questions open for the subject to "develop" his/her type of predominant learning channel without conditioning.

4.2.1. Eye movement and its sensory channel

With the questions we have asked, we have sought answers based on visual, auditory and kinesthetic memories. So, if the question evokes the use of the visual

channel, the look should be directed upwards, if it is auditory in the central area and if it is kinesthetic downwards. On the other hand, if the question suggests a memory, the subject's look will go to the right, and if it is something imaginary, to the left. In addition to taking this into account, we must emphasize that, in order to obtain clearer results, the eye movements will be compared with the reference subjects regardless of which one.

To make the compression clearer, this is a brief outline of what the adequate eye movement of the subject's look would be[4] in relation to what has been explained. Therefore:

Questions 1-3 (visual, remember): look up and to the right.
Questions 4-6 (visual, imagination): look up and to the left.
Questions from 7-9 (auditory, memory): look to the center and to the right.
Questions from 10-12 (auditory, imagination): look to the center and to the left.
Questions from 13-15 (kinesthetic, memory): look down and to the left.
Questions from 16-18 (kinesthetic, internal dialogue): look down and to the right.

We remind you that, for better understanding of the subsequent points, it is advisable to review *scheme 1* (in point 4).

After analyzing eye movement subject by subject, we could observe that all subjects had a clear predilection for the use of the visual channel, since most of the time they directed their look upwards. This being performed perfectly by two subjects, not only in directing their look upwards but also in the sense of left and right.

We can highlight that the eye movement that has coincided more often with what is stipulated by NLP is the one corresponding to the kinesthetic channel when it is an internal dialogue (down to the right).

It should be mentioned that, regardless of the channel used, several subjects had a predilection for directing their look to the left, something that will be relevant in the second part of the experiment.

We must also bear in mind that, if a subject repeats a very defined movement at any given time, it will coincide with the provisions of NLP by probability. So it would not be entirely reliable to consider this movement as a success: gesture reading does not reach the reliability of text comprehension, as understood by Odalis Lorié (2015).

4.2.2. Eye movement as a lie detector

At this point, we will focus on analyzing eye movement only in relation to the direction of one's look between the left or the right, knowing that, if one's look

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[4] Eye movement is described according to the perception of the observer. So, when talking about the subject looking to the left, it is from the point of view of the interviewer and not of the interviewee.

focuses mainly on the right, the subject will be telling the truth as it is a memory, and if instead, the focus is on the left, the subject is lying.

The subjects answered the last three questions of the interview openly and without conditioning, the questions being: what did you do last weekend?, what would you do if you won the lottery?, and tell me about your last trip. Half of the subjects responded sincerely, so that they will be compared with the actions of reference subject 1, and the other half that did not do it have reference subject 2 as an example.

The first thing we will do is explain the eye movements that the subjects have carried out, that is, we will take into account the number of times their look is directed to the left whose meaning is that they are lying (like reference subject 2), or to the right, which means the subject is telling the truth (as reference subject 1). We will also take into account other indicators that can show if someone is lying, such as: itchy mouth, sweat, fixed eyes, paleness, excessive justification, lowering the voice, swallowing saliva or feeling relief when finished responding.

We have made a summary table of all the subjects, the number of times they look to the left and to the right, the indicators, the interpretation according to NLP and the real response given by the interviewees. This way we can quickly compare whether this NLP tool is reliable. Resulting in the following table:

Table 2. *Second part of the interview, detect lies.*

	Look at the i eft	**Look to the right**	**Other indicators**	**Interpretation according to NLP**	**Real answer**
Subject 1	14	15	Dry mouth.	Undefined	True
Subject 2	2	7	__	True	Lies
Subject 3	8	6	Repeat question.	Lies	Lies
Subject 4	18	16	__	Lies	True
Subject 5	14	8	Dry mouth. Biting lips	Lies	True
Subject 6	11	9	__	Lies	Lies
Subject 7	19	15	Justify yourself in excess.	Lies	True
Subject 8	14	6	__	Lies	Lies
Subject 9	13	20	Repeat question	True	Lies
Subject 10	1	18	Justify yourself in excess. Gulp.	True	True

Source: self-made

As can be seen in most cases, NLP has not been reliable in terms of the truthfulness of the interviewees' words. Even so, it has 44%[5] of success, which gives it some credibility, or at least initially.

We consider that taking into account whether directing one's look more times to the left or to the right is not entirely reliable if the eye movement mentioned in previous tables is not considered. For example, there are many subjects who have had a clear tendency to the left (mostly through the visual channel) and the subjects have responded with sincerity. Therefore, according to NLP, all those who have had that predilection for the left side have been lying at all times.

5. CONCLUSIONS AND FUTURE APPLICATIONS

Thus, NLP is understood to be a pseudoscience (it is said that it flees from evidence and bases its credibility on adulterated visions of the success of its own predictions, according to Gutierrez Muñoz, 2007), whose tools have not been scientifically proven or demonstrated. With our research and by conducting an experiment, carried out to know if the ability of NLP to detect when a person is lying is reliable, we have been able to corroborate the initial hypothesis. NLP is not a one hundred percent reliable tool.

We have observed how there is no exact relationship between the direction of one's look and the type of learning channel that predominates in a person (visual, auditory or kinesthetic). That is, looking up when you are reflecting on what to answer to a question does not imply that your perception channel is primarily visual. In the same way that this happens, although somewhat more correctly, looking to the left does not mean that the person is constantly lying. But it can be a custom or a mania.

We have also analyzed how NLP is applied in very different fields such as: neurology, education or in a business organization; and that there are many tools or tips that help us use NLP in the best possible way. For example, adopting the same posture as another person, breathing in unison or moving hands one way or another may be relevant when having a face-to-face conversation. After all, we are people who, to a greater or lesser extent, empathize with others, and if one opts for a defensive posture, the other person will end up choosing to do the same.

In relation to eye movement, NLP tools, not being entirely reliable, would not be advisable to be applied in certain areas. We consider that, in fields where their relevance is important, how to use them in a selection process or as a lie detector for a crime is not appropriate.

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[5] The real percentage of a periodic 44.44%. The percentage is made on nine subjects, not ten because subject 1 does not have conclusive results.

Our object of study, focused on the application of NLP in a personal interview, has helped us to implement the tools in relation to eye movement and, although the result has not been completely favorable, we have to point out several points.

NLP is much broader than eye movement because it takes into account certain indicators, to find out if someone is lying, and these indicators are intimately related to nonverbal language or synergy. Synergy being understood as the "relationship between body language and words" (Turchet, 2010). That is, it tries to analyze the body movements that a person performs unconsciously.

By focusing solely on eye movement and its meaning, we may not have covered enough for the NLP tools to be more valid. Thus, we consider to subsequently carry out an experiential piece of research similar to that carried out, which includes not only one's look but also the microgestures or the way of expressing oneself verbally, that is, we will introduce other variables or factors that non-verbal communication takes into account and that we have been able to highlight in our research.

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7. ANNEXES

INTERVIEW

Good morning/good afternoon, we are conducting a piece of research on Neurolinguistic Programming, so we need your participation. This is a recording in a closed room where you will have to answer a few short questions, with an approximate duration of ten minutes, following the interviewer's instructions. We remind you that the interview is completely anonymous and for research purposes only.
Thank you very much in advance.

1. What are the colors of the French flag?
2. What ingredients do spaghetti carbonara have?
3. Describe a landscape of a trip you have taken.
4. Briefly describe what your dream home would be like.
5. Build a piece of furniture mentally, what would it be like?
6. Imagine creating a new species of animal, half dog, half duck. How would it be? What parts would it have of each animal? Describe it.
7. Hum a song from your childhood for a few seconds.
8. Say what the seventh word of the Lord's Prayer is.
9. Who of your friends has the highest-pitched voice?
10. If you could hear the voice of your favorite animal, what would it be like?
11. What would a ghost's voice sound like?
12. What color do you think the notes, high-pitched or low-pitched, would be on an instrument?

13. What did you feel when you traveled by plane for the first time? (If you have not traveled by plane, you will be asked for another means of transport such as a ship or a train).
14. What do you feel when you walk barefoot on the grass?
15. Think of your favorite cologne and try to say what it smells like or what it transmits to you.
16. Think for yourself, as if it were an internal monologue. If you could ask a question to someone who has died, what would it be? What do you think the deceased would answer?
17. How would you feel if someone close to you told you that you are going to live abroad and will not return? Describe the feeling.
18. Again think the answer for yourself. Make a shopping list mentally with things you need at home.
19. What did you do last weekend?
20. What would you do if you won the lottery?
21. Tell me about your last trip. Things you saw, did, ate...