

# The Primacy Position of the Comparison Question

Carlos Monge<sup>1</sup>

## Abstract

A simple question for many, idle for others, but necessary to answer for everyone, is why the comparison question occupies a first position based on the relevant question when it comes to format sequences corresponding to deception polygraph techniques. This questioning is transcendent when it occurs in the context of the scientific, legal debate, or due to the scrutiny of polygraph consumers who make administrative decisions based on the diagnostic results. However, within the polygraphy union it seems that the answer has been dealt with in informal settings, in hallway talks or as a classroom topic, but the truth is that its documentary formality seems to be scarce, for this reason, this discussion has the intention of providing basic knowledge to field examiners about this procedural unknown, of which, we are convinced that they are the ones who must be prepared to answer this and other procedural questions in order to maintain the scientific reputation of our profession.

**Key words:** Primacy position, comparative question, habituation, fatigue, sensory adaptation, progressive loss in response magnitude, sensitization, pre-established formats, deception polygraph techniques

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<sup>1</sup> Carlos Monge, a Mexican national, is a polygraph examiner with a passion for research, instruction, and dissemination of the science of psychophysiological deception detection. He has a degree in criminology, criminology and forensic techniques; a master's degree in criminology, a doctorate in forensic science and a specialty in polygraphy from the CISEN National School of Polygraphy. He has several studies in Spanish dedicated to polygraphy and is the author of the book: *Fundamentals Polygraphy Scientists* (2021). He has had various participations as a lecturer and polygraph instructor in Latin America.

## Introduction

One of the questions that apparently may seem of little importance to address, lies in the cause or reason why the comparative question always occupies a previous or first position to a relevant question when it comes to formats of “deception polygraphic techniques” (Figure 1), and well, possibly this question would remain as a simple leisure question without much significance; however, things become serious and complex when, in a context of debate, scientific, legal or administrative scrutiny questions the field examiner about the motive or pristine foundations that underlie this polygraphy methodological engineering. This is stated by Nelson (2014), who comments that it seems that these issues are the exclusive domain of researchers or scientists, but the truth is that it is the field examiners who show their faces in the practical world, who, ultimately, do are not prepared to answer these complex questions risk damaging their professional image, confidence in their individual diagnostic opinion, and most seriously of all, they may affect the credibility and scientific status of our profession. Therefore, it is our hope that this essay provides the reader with a brief but solid answer about this apparent technical simplicity.

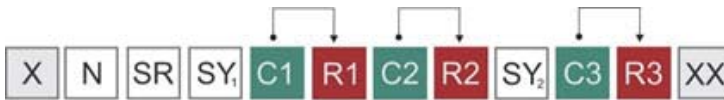


Figure 1: As an example, the pre-established sequence of the ZCT Federal technique can be seen. In it, it is possible to recognize how the comparison questions occupy a position of primacy compared to the relevant questions.

However, we cannot ignore briefly discussing the topic of the comparative question from a comprehensive epistemological analysis, covering the fields of experimental methodology to find the meaning of the comparative question from the language of the scientific method, continuing through cognitive psychology and complementing with polygraph theory.

It is in this sense that the CQ is a type of stimulus and psychological variable that is used within the methodological engineering of the so-called comparative question techniques; name used to distinguish polygraphic techniques that use a comparison model based on the analytical contrast of reference samples (or control sample) versus objective samples (problem sample); methodological scheme that is normally used in the clinical and forensic field with the so-called scientific detection tests, also referred to as scientific identification techniques. With regard to polygraphy,

it uses the method of compared lies, which consists of comparing a “known” lie sample (derived from the comparison questions) against an “unknown” lie sample (from the relevant questions object of the comparison). study), so that from these two referents a systematic and structured sequence of experimental tests is carried out in which a comparison analysis is carried out based on the competition of physiological characteristics associated with the response magnitude criterion, in which, it assumes that the stimuli that represent greater psychological significance for the examinee will exhibit a differential load in the physiological response strength (Monge, 2021).

From the field of polygraphy, Nelson, Handler, Prado and Blalock (2020), simplify the issue by referring to the fact that the comparison question is used to juxtapose their responses to the reactions of the relevant questions for their analysis. Stating that it is intended to provide truthful individuals the opportunity to respond to a question that suggests a common transgression that induces a greater physiological response than research or objective questions. In addition, they serve as a basis for comparison to support a more objective and reproducible numerical transformation for an analysis of the physiological responses to the relevant questions.

From the worldview of experimental methodology, the test phase (or in-test) brings together the essential components to constitute a form of intrasubject-type scientific laboratory experiment, in which the PC represents the independent variable (V.I) that is usually defined as the treatment or experimental procedure that the experimenter provides in a controlled manner to observe the possible changes caused in the dependent variable (V.D), itself, which symbolizes the relevant question. In this sense, the experimental treatment in the form of “introduction of a comparative question” is usually provided in the form of dialogues or discursive scripts that describe problem behaviors of a common order.

This procedure plays an important role in the polygraph experiment because this intervention is expected to generate changes at the psychological level of the test subject before the act of lying, especially on his cognitive, emotional and motivational system. Said experimental treatments can be of two types. One of them is based on the psychosocial manipulation of the examinee, which constitutes the primary formula of the probable lie comparative question, since in this procedural scheme the polygrapher carries out discursive maneuvers that induce the evaluated person to lie about problem-behavioral issues. of common order that are presented under a fictitious or simulated gravity nature.

The other mechanism is through the direct lie comparative question, in which the test subject is consciously instructed to perform an alleged act of lying, but which involves more complex cognitive mechanisms, in which the truthful subject is expected to be cognitively engaged. In solving the tasks entrusted by the polygraph examiner to respond correctly to said stimuli, contrary to the deceitful person, it will represent greater psychological significance to attend to the relevant stimuli, leaving this cognitive activity of direct lie questions in the background. In short, any of the methods of compared lying, these treatments can be thought of as a distracting element at the cognitive level of the examined subject, which allows differential distribution of their brain energy or cognitive load depending on whether or not they are truthful to the relevant questions.

### Development

To delve into this dissertation, we can preliminarily argue that the possible answer lies in the field of experimental psychology, and especially, in learning theory; knowledge framework where a concept called: loss or gradual decrease in biological response strength lies, is a psychophysiological concept that describes how the responding behavior of a biological system goes from greater to lesser response strength (physiological, muscular or cognitive) against to a specific stimulus or stimulating situation that is presented to them recurrently, either in a sustained manner (continuous stimuli) or by exposure intervals (discrete stimuli).

The concept of “biological force” was a phenomenon initially documented and defined by a great Russian physiologist who laid the foundations of classical conditioning, recognized worldwide as Ivan Pavlov. In general, this scientist observed that there was a significant difference in the biological force of response elicited by conditioned versus unconditioned stimuli (Domjam, 2009); which made reference to the fact that each stimulating agent can cause different variations in the intensity of the physiological response of an organism depending on the conditioning work; however, at present, in terms of psychophysiology or experimental psychology, the concept of magnitude of response is mostly used; itself, which can be defined as a measure of the size, amplitude, vigor, or extent of a physiological, muscular, or mental response. It is also referred to as a reaction or response force (Domjam, 2009; Martínez & Miangolarra, 2006; Monge, 2021).

Therefore, the currently available knowledge explains that the phenomenon of extinction or decrease in the magnitude of the response can be influenced by three factors, but that in the end it is possible that one prevails over the other, or that they

converge to give rise to the effect described. One of them is normally referred to as fatigue, another as sensory adaptation, and one more as habituation (Figure 2).

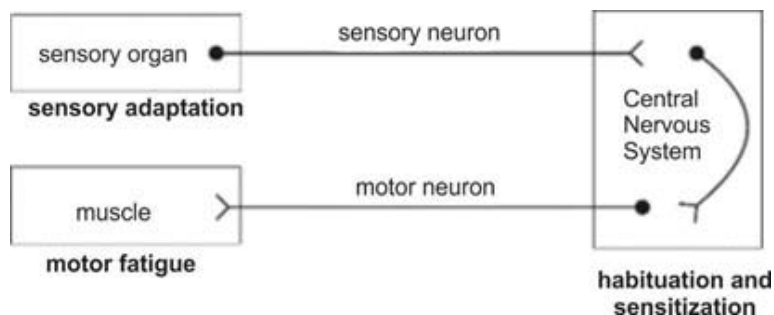


Figure 2: "Nervous circuit of the reflex response". Sensory adaptation occurs in sensory receptors. Fatigue takes place in the effector muscles and habituation and sensitization occur in the central nervous system, at the cognitive level. Model taken from Domjam (2009).

Therefore, let us briefly present their main differences in order to achieve a contextual understanding of why the comparison stimulus always occupies a position in advance regarding the relevant question when it comes to templates (formats or sequences) of deception polygraphic techniques (not so in recognition techniques, since they do not have this type of experimental stimuli).

Thus, fatigue is one of the phenomena by which an elicited response may decrease or not occur, mainly because the muscles involved in the response are incapacitated when a stimulus is presented repeatedly. Within the "reflex circuit", the stimulus is captured by the sensory organs, the signal is transferred to the central nervous system through the sensory neurons, and this, in turn, sends the response signal through the motor neuron heading to effector muscles, however, they do not tend to respond with the same vigor as at the start of stimulation. It is worth mentioning that this effect may not be so involved in the progressive loss of phasic response capacity associated with the stimulation context of the polygraph examination, since the dynamics of collecting psychophysiological samples does not demand a physical-muscular task from the test subject. to attend to the stimuli, as can be the case of a basketball player, in which his basket jump tends to decrease as it is repeated throughout the game, a difference between the first and the last jump would be expected. However, this does not imply that it should be totally excluded as one of the probable factors involved in the gradual decrease in reaction force, since there may be a variation in this effect when talking about mental or cognitive fatigue, which seems to have a greater relationship and involvement in the context of the examinee.

For its part, sensory adaptation is another factor that influences the “temporary” decrease or cancellation in the intensity of the elicited responses to stimuli that are presented repeatedly. Unlike fatigue, this occurs at the level of the sensory organs, in the phase of input or capture of the stimulus, so it is thought that the sensory neurons do not send information to the nervous system, and therefore it is not expected. an answer. As Domjan (2009) points out, the response will not be observed if, for some reason, the sensory organs “temporarily” lose sensitivity to stimulation (p. 41). For his part, Myers (2005) describes sensory adaptation as the decrease in sensitivity to “a constant stimulus”. He refers to this psychophysiological property as an ability of our sensory receptors to reduce their sensitivity to specific stimuli, in order to focus our attention on other, more important situations in the environment without being distracted by constant stimulation. As examples, he cites scenarios where unpleasant odors are present, and that after a moment we stop perceiving. Or, when we jump into a pool, and for a moment the water is perceived as very cold, but after a few minutes it seems more pleasant. It should be noted that this factor also seems to have little application to the context of the psychophysiological collection of polygraph data, since in general terms during the in-test phase the aim is predominantly to stimulate the auditory canal, which represents the input for the neurocognitive processing of the stimulating questions.

Regarding the effect of habituation, Froxán (2020) defines this phenomenon as the “temporary” decrease or disappearance of a response that is produced by repeated exposure to a specific stimulus. This faculty is extremely useful, since it decreases the salience of certain irrelevant stimuli in a certain context, facilitating a response to other stimuli that would be more relevant at that moment.

This is how Domjam (2009) points out that habituation occurs at the level of the central nervous system, on the cognitive level; which implies that specific stimuli are captured by sensory receptors, transmitted to the brain and processed by the cognitive system; however, it is expected that there will be a decrease or cessation of synaptic excitation towards motor neurons responsible for motivating responsive changes in effector muscles and target organs. This does not imply that the subject stops capturing the general sensitivity of the environment, if he does so in a focused way (on certain stimuli), opening the window of perception to other more salient ones.

In short, “habituation is a phenomenon in which the repeated presentation of the same stimulus produces a decrease in the response, sometimes until its disappearance. From an adaptive point of view, habituation allows the organism to eliminate non-essential responses to biologically irrelevant stimuli, since when the stimuli can

produce serious consequences, habituation does not occur, but an increase in the response to them; awareness” (García and Quero, 2012, p. 915). Likewise, Nelson (2014) affirms it in the polygraphic evaluation scenario, referring that truthful examinees tend to get used -or get used to- the cognitive and emotional impact of listening and responding to relevant questions (stimuli), at the same time that they sensitize or they increase the alertness and reaction potential of deceitful people.

Thus, the habituation effect seems to be the main psychological phenomenon that influences the situational context of polygraph data collection (during in-test), normally seen as a progressive decrease in response intensity. physiological, or where appropriate, the cessation of phasic changes. This variability can be regularly observed under three scenarios in the polygraph data collection phase. Let’s see.

The first of them assumes that habituation can manifest itself in a specific graph. Regardless of the series, the test subject will habituate to one of the two types of test question groups (relevant or comparative stimuli), manifesting a higher level of physiological intensity in one of them. In this context, Pérez (1998) illustrates that habituation to a stimulus can cause a decrease in the partial response to similar stimuli and it usually decreases faster the weaker the stimulus is for the subject. Thus, it is thought that the adaptation (habituation) and sensitization to the test questions starts from the pre-test interview, while people who are deceptive to the relevant questions will reflect a greater reaction force to these stimuli and less to the questions. comparative. Conversely, subjects who are truthful to the relevant stimuli will manifest greater sensitivity to comparison questions, a phenomenon that can be summarized in the polygraph law called: differential potential principle (Monge, 2021) (Figure 3).

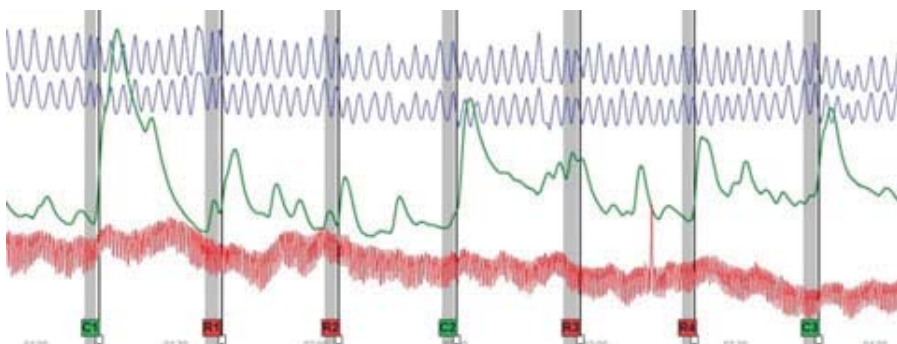


Figure 3: The graph shows the decrease in reaction strength to relevant stimuli (habituation) and greater sensitivity to comparison stimuli.

A second scenario where polygraph habituation can be distinguished is also manifested on a specific graph, showing a progressive decrease in the physiological intensity of the response, which contrary to the first scenario, the adaptive phenomenon gradually affects the two groups of stimuli. (comparative and relevant questions). This situation is usually the most illustrative and intuitive about the habituation effect (Figure 4).

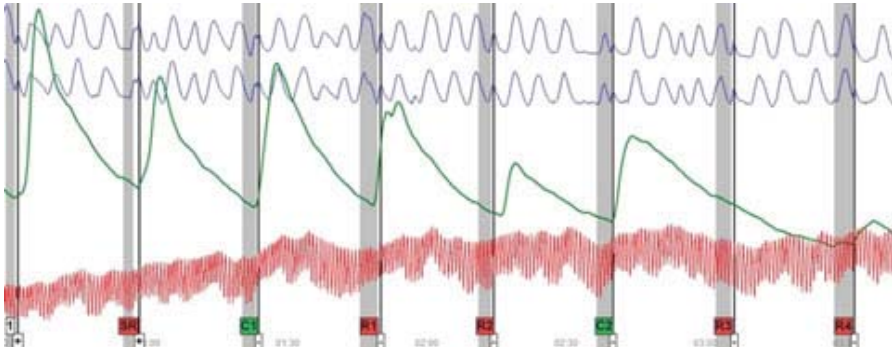


Figure 4: The progressive loss in the magnitude of the response to exposure is distinguished by time intervals of the discrete test stimuli.

Finally, the last expected scenario on the way in which habituation can occur is only appreciable at a global level, under an integral and clinical analysis of all the graphs collected from the individual examination, in which, in the same way, the successive decrease can be evidenced. in the capacity of the physiological response between the first and the last graph of the test, affecting most of the stimuli. This global effect in the decrease in the response capacity seems to be the main reason why in polygraphic engineering it was decided to position the comparative question in advance versus the relevant question; We must remember that the comparison question is an experimental treatment in which cognitive, emotional and motivational processes linked to the act of lying are “artificially and temporarily” evoked (Figure 5).



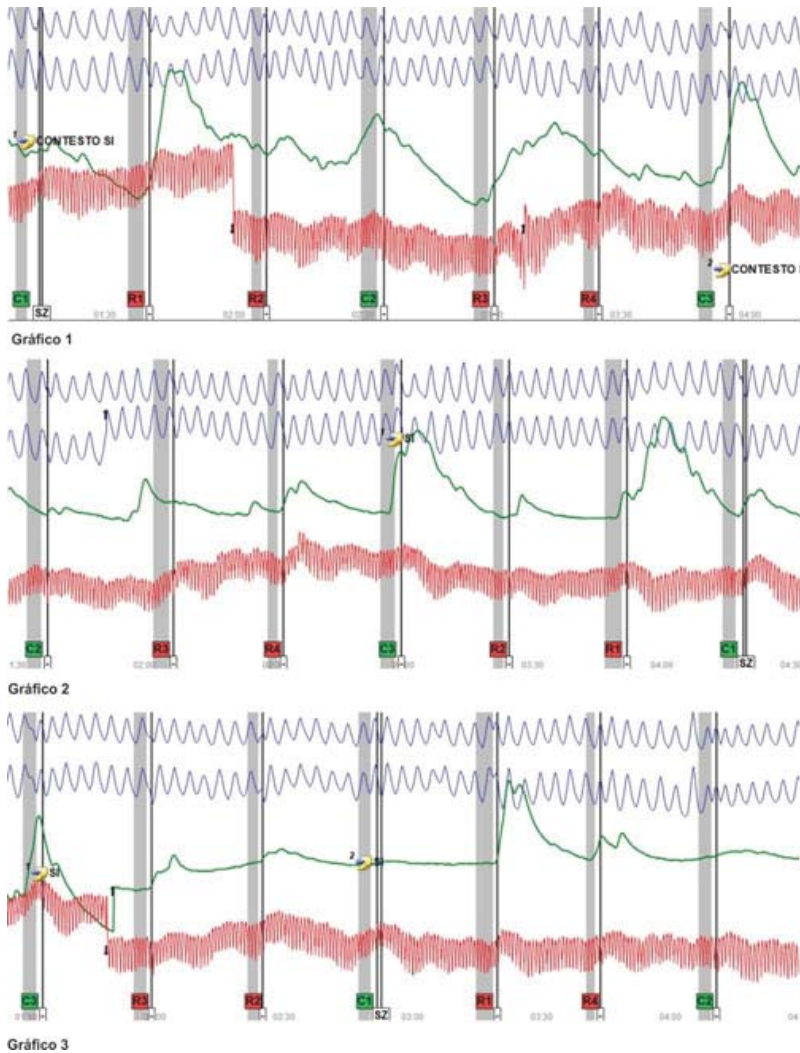


Figure 5: Under a holistic analysis of the three graphs presented here, the observer can distinguish the gradual decrease in magnitude in physiological responsiveness.

## Conclusion

Based on what has been discussed before, we can highlight that the intensity in the response of a biological system to specific stimuli, exposed in a recurrent, sustained manner and/or for intervals of time, usually undergoes a decreasing change in the

biological force of response that goes from highest to lowest during the course of the stimulation sessions. This means that in the relationship of the time / stimulation variables, it is expected that the responsive capacity will be progressively diminished; which denotes that biological organisms of various species, in general, have a response system limited to their stimulating environment, in which the neurohormonal resources, triggers of muscular, cognitive and organic responses, do not maintain a sustained response vigor and incessant during moments of stimulation (Figure 6).

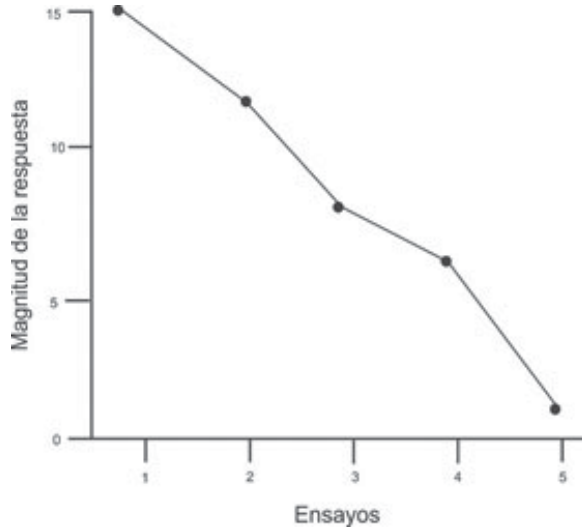


Figura 6: Representación gráfica que muestra la relación negativa entre la fuerza de la respuesta y el número de pruebas de estimulación.

This regularity of biological nature, seen as the gradual decrease in the expenditure of physiological response to particular stimuli, is one of the edges on which professionals in psychology and experimental neurosciences have agreed (García and Quero, 2012; Pérez, Gutiérrez, García and Gómez, 2005; Domjam, 2009; Monge, 2021; Pérez, 1998; Rodríguez and Párraga, 1991; Labrador, 2008), and therefore, we are in a position to affirm that we are facing a psychophysiological Law antagonistic to the responsive property of organisms, on which polygraphic engineering bases its format designs on “deception techniques” to strategically establish the test questions in pre-established sequences, presenting the comparative questions in a position of primacy over the relevant questions under the procedural purpose of giving you a favorable factor in the face of the inevitable effect of this antagonistic

law, considering that the comparison question is a sample of a fictitious, simulated or artificial lying mental state that is intentionally provoked by the polygraph experimenter under conditions from laboratory.

Thus, the a priori privileged location of comparative stimuli versus relevant stimuli offers the possibility of reducing the negative impact of the extraneous variable of progressive loss in response capacity on comparative lie questions. For this, we must remember the reference by Monge (2021), who comments that the comparative questions represent the independent variable (V.I) in the experimental design of the polygraph evaluation; which constitutes the experimental treatment that is provided to the dependent variables (V.D), which are the relevant questions, to observe the possible changes in their responsive behavior in the presence of these distracting (cognitive) factors (comparison questions).

Of course, said experimental treatment can obey a probable lie or directed lie procedure, which ultimately constitutes a form of laboratory psychological (emotional, cognitive and motivational) treatment that is prepared, conditioned and administered intentionally and fictitious (of the act of lying) by the experimenting polygrapher to the test subject in an argumentative way. Now, one of the most important aspects that must be highlighted is that, unfortunately, both procedures create a psychological state of a fictitious nature and of a temporary effect, and that, consequently, constitutes the procedural logical reason for the position of primacy held by the question. comparative against the relevant questions in the test formats of the „deception techniques”. Situation that can be visualized as a form of privilege for people who are not deceptive to target stimuli, which makes it possible to reduce, as far as possible, the antagonistic effect of habituation on said „artificial treatment of lying”, the comparative questions.

On the other hand, it is essential not to talk about the secondary position of the relevant questions as opposed to the comparison questions, since it seems to be read as something counterproductive; however, the effect is positive for the polygraph experiment, since it is assumed that the subsequent placement of relevant questions for a deceptive person would show greater sensitivity in their physiological reaction despite being under the effect of stimulating adaptation, which, Paradoxically, it would act to benefit the secondary position of the relevant one, since let us remember that the magnitude of the response is expected to gradually deteriorate through the time factor; therefore, the deceptive subject would react by content and not by position, a condition that could be explained as habituation to comparative questions and sensitization to relevant questions.

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