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Doctors' nonverbal communication and quality of service

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submitted in partial fulfillment
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by

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Author's Declaration of Originality

I hereby certify that I am the sole author of this thesis and that it has not been previously, or concurrently, used or published and that any assistance I have had in preparing it is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Lastly, I hereby certify that this paper was prepared by me for the requirements of the Interdisciplinary Postgraduate Program in New Entrepreneurship, Innovation and Development of the Department of Planning and Regional Development, Economics and Mechanical Engineering of the University of Thessaly.

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ABSTRACT

The present research attempts to shed light on the role of nonverbal communication in clinical interactions. Patients' perceived service quality and satisfaction are measured in the context of certain doctors' nonverbal cues (eye contact, smiling and leaning as body posture) and their gender. To that end, 4 experimental research scenarios were formulated via photographic representations. The first two depicting a male doctor exhibiting positive and negative nonverbal behavior respectively and the others a female doctor in the same context. After analysing descriptive statistics on the sample, multiple linear regressions were conducted to check the relationship between the variables in dyads. Finally, a two-way Multivariate Analysis of Variance (MANOVA) was performed to investigate the relationship among the independent (doctor's nonverbal communication, doctor's gender) and dependent (service quality, customer satisfaction) variables. Results concluded that service quality is positively related to customer satisfaction and doctor's nonverbal cues indeed affect patients' assessments. As far as the doctor's gender is concerned, no statistical significance was observed.

Keywords: Nonverbal Communication, Nonverbal Behavior, Smiling, Forward Lean, Eye Contact, Quality of Service, Customer Satisfaction

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1. CHAPTER I: INTRODUCTION

Background and Rationale for the Research

Service providers from multiple sectors have vigorously expressed their interest in aiming their attention at how customers' expectations of service quality are structured, to come up with strategies that will lead to their much-desired satisfaction (Cronin *et al.*, 2000; Oliver, 1981; Olson and Dover, 1976). That need for further knowledge is pre-eminently present in clinical interactions, where effective communicating is of the highest importance (Griffith *et al.*, 2003) and expressive nonverbal cues (more forward lean, closer interpersonal distance, nodding and gazing) play a crucial role to that end (Hall et al., 1995). It cannot be overlooked any more. When doctors exhibit better nonverbal communication skills, patients' satisfaction rises (Griffith *et al.*, 2003; Hall *et al.*, 1994; Hall *et al.*, 1995; Mast, 2007). Nonetheless, not much literature exists on investigating how patients perceive doctors' nonverbal cues since most of it circles around doctors trying to identify patients' nonverbal cues to better treat them (Griffith *et al.*, 2003).

What is obvious is that nonverbal communication is gaining more and more ground in research across disciplines (Hall, 2001; Palmer and Simmons, 1995) and there is an ever-growing need to investigate it through customer's perspective rather than that of the service provider's. That way, service providers can gain some insight on how they can tailor their behavior to better service and satisfy customers. The same, if not more, applies to the health sector where the interaction between a physician and a patient is requires the utmost care and sensitivity and calls for careful consideration.

This is the reason that this study has singled out to investigate nonverbal communication in the health sector in Greece where, to our knowledge, no such study has ever been conducted.

Research Aim

The aim of the present study is to make use of designed experimental research scenarios and an adapted SERVQUAL model and disconfirmation paradigm to investigate the extent to which doctors' nonverbal communication drives patients' perceptions on the received quality of service and their satisfaction in Greece.

Research Questions

The main issues addressed in this study are service quality and customer satisfaction through nonverbal communication in the context of health sector. Through making use of the

SERVQUAL model and the disconfirmation paradigm customers' expectations and perceptions need to be investigated. Thus, the following research questions need to be answered.

1. Do doctors' different nonverbal cues affect patients' satisfaction?
2. Do doctors' different nonverbal cues influence patients' assessments of service quality?
3. Are customer satisfaction assessments affected by service quality?
4. Does doctor's gender when communicating nonverbal cues play an important role in patients' assessments of service quality and satisfaction?

Thesis outline

Chapter I: Introduction

This chapter functions as an introduction to the present research's rationale, its objectives and significance.

Chapter II: Literature Review

This chapter lays out the existing literature review on the concepts under study. The first one is that of nonverbal communication where its typologies are being discussed followed by antecedents and consequences of it, as well as various factors that can affect its effectiveness. Service quality and its dimensions are then explained by reviewing other researcher's aspects on its functions. Customer satisfaction is the ultimate concept to be analysed though the spectre of the disconfirmation paradigm, taking other researchers' findings into account and afterwards investigating its relationship in regard to service quality. Once the above are considered, the conceptual framework of this study comes to life where the research hypotheses are also formulated.

Chapter III: Research Methodology

It describes the research methodology in detail by displaying information on this study's philosophy, approach, strategy, method and time horizon followed by specifics on how data was collected and the measures that were used to investigate each concept separately.

Chapter IV: Results and Data Analysis

This chapter is the one to analyse data and present their results thoroughly. At this point, descriptive statistics help the reader become acquainted with the demographic characteristics (gender, age, education, doctor visits, and chronic health problems) of this study's sample and the reliability and validity of the results by calculating Cronbach's alpha. Means and standard deviations also present a more detailed view on the results before proceeding with inferential statistics. Pearson's correlations are a first view at the existence of statistically significant

relationships among the variables and the Hypotheses that test the relationship between groups of two variables are investigated through multiple linear regressions. (Nonverbal communication – Customer satisfaction, Nonverbal communication – Service quality, Service quality– Customer Satisfaction). Finally, a two-way MANOVA explores the relationship among the independent (doctor's nonverbal communication, doctor's gender) and dependent (service quality, customer satisfaction) variables, attempting to answer the final hypothesis about whether doctor's gender affects service quality and customer satisfaction in the context of their different nonverbal cues.

Chapter V: Discussion

The final chapter is the one that discusses the present study's findings and their theoretical and practical implications, taking the limitations that it is presented with into account as well. Additionally, a few insights for further future research are also included.

2. CHAPTER II: LITERATURE REVIEW

2.1 Communication

Ancient Greek philosopher Aristotle defined humans as beings of a social nature, highlighting their insatiable need for communication. The concept of communication is a rather complex one, being in the limelight of various disciplines ranging from sociology, anthropology, linguistics, philosophy, psychology and history to political sciences, biology and economics (Krauss and Fussell, 1996). Thus, it is not surprising that a great deal of researchers throughout history have attempted to provide a satisfactory definition for it.

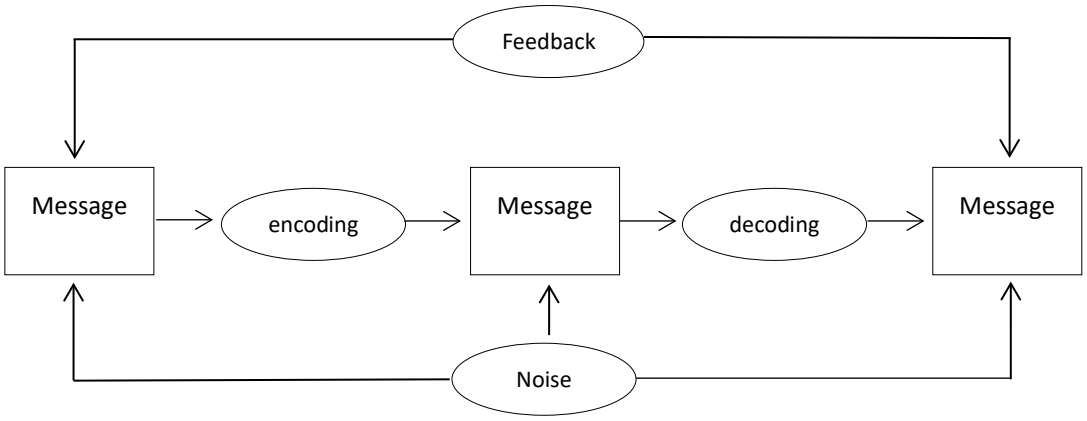
Keyton's (2011) definition of communication stresses out the importance of a 'common understanding' by defining it as the process of transferring information from a sender to a receiver, both of whom share a common understanding of the meaning being conveyed. A few decades before Keyton (2011), Merrihue (1960) defined communication as any kind of initial behavior originating from a sender that transfers meaning to a receiver, causing the desirable behavior impact. In other words, it is clear that if the two stakeholders fail to obtain a common understanding of the information that is being transferred, communication ceases to exist (Lunenburg, 2010).

2.1.1 The Process of Communication

According to Birdwhistell (1970), communication constitutes sending and receiving thoughts, information, beliefs, behaviors and emotions throughout a single or multiple mediums, inducing a reaction. It can be defined as a process through which a Sender A (who may be an individual or even a team) transfers information, ideas, thoughts or actions to a Receiver B (who may be an individual or even a team) so as to have a certain influence on them by inducing ideas, actions and emotions and eventually affecting their state or behavior (Bourantas, 1992). It is, therefore, apparent that communication is a two-way process, initiating from the sender's need to convey any kind of meaning to a receiver. It takes place when a sender and a receiver exchange spoken messages (verbal communication) or non-spoken ones (nonverbal communication). The word '*sender*' refers to the individual (or group of individuals) who passes on a message after they *encode* it by using certain words, symbols or nonverbal cues. Then, they make use of various ***mediums*** through which the message is transmitted. Those can be – but not limited to – a written extract, a phone call or text message and a face-to-face interaction. Afterwards, the '*receiver*'

is the one who decodes that said message in a way so as to comprehend and give meaning to it. During this process, however, some kind of ***noise*** may exist, which makes it difficult to properly decode it. A few examples of noise can refer to language barriers, interruptions or even the existence of conflicting perceptions. The final step of the process of communication is that of the ***feedback***. The receiver, after having received and decoded the message, responds to it and in this way the sender is able to assess the level of understanding (Figure 1). If any step of the aforementioned process is presented with a complication, communication is not as productive as it could be (Keyton, 2011). One example of an ineffective communication could be one where feedback is absent. The message was encoded, transferred and encoded but the receiver failed to present any response to it. In this particular setting, communication is one-way.

Figure 1. The Communication Process



Source: *Own process from Kotler and Keller (2011)*

2.1.2 Sender and Receiver Characteristics

Many researchers (Keyton, 2011; Tourish, 2010), after having studied the concept of communication extensively, have concluded that in order to achieve satisfactory and effective communication, senders and receivers must possess certain skills and characteristics.

Sender

According to the conclusions that Keyton (2011) and Tourish (2010) reached, the sender of a message in a communication process should be characterized by the following 8 skills:

1. One has to clarify their notions before attempting to communicate them. The more regimented the idea or problem to be presented, the more articulate it is.

2. The sender has to determine the objective of the communication beforehand. It is crucial to become acquainted with the outcomes they expect to receive from the whole process, whether those constitute the simple dissemination of information or the adjustment in one's behavior. Once that is clear, the sender may decide upon the language or their overall approach and tailor it to serve towards that particular purpose.

3. They also have to examine and take account of the overall physical and human environment. Words are not merely the sole medium used to convey meaning. Some of those factors affecting communication may refer to the social environment, whether it is a private or a public one or even the receiver's usual habits and expectations. An effective form of communication has to capable of adapting to the corresponding environment.

4. If needed, they have to be able to co-decide with others on the planning of communication. That way will transfuse knowledge and objectivity to the message to be transferred.

5. Senders should also be mindful of the different tones while transferring a message, apart from its principle content. Their intonation, their expression and whether or not they are receptive to feedback are of the utmost importance and may affect the desired outcome. Language may also play an important role and affect the receiver's reaction, especially when the words being used 'carry' a certain tone of emotion and empathy.

6. When opportunity arises, senders should also make the most of transferring a message that will add value or aid the receiver in any way. That can occur by taking other's needs and best interests into consideration.

7. Senders should always pay attention to the process of communication and observe the flow of it so as to prevent their 'getting lost' somewhere along the way. That can be achieved through their questioning and encouraging the receivers to express their thoughts and by reexamining their overall reactions. All in all, a sender should make sure that they receive feedback, in order to determine whether there was a complete understanding and the desired action took place.

8. They should also cultivate the skill of being active listeners. That means not only being able to hear what the receivers have to send back to them, but also paying attention to any other hidden meaning their behavior might convey.

Receiver

An individual's ability to know how to listen to their interlocutor enhances the possibility of having an effective communication. Kneen (2011) presented 10 good practices for proper listening that are present below:

1. The receiver should refrain from talking since it is not possible to comprehend the message being transmitted while talking at the same time.

2. The receiver should be made feel comfortable to express their thoughts and feelings.

3. Receiver has to be able to comprehend all that the sender is trying to communicate to them. This is easier when the sender is someone that the receiver is fond of listening to.

4. They have to be concentrated and try to avoid any kind of noises that might occur.

5. They should sympathize with the sender and listen carefully to their points of view.

6. They have to be patient and give the senders' adequate time to transfer their message without interrupting them.

7. They also have to be calm and poised, since an enraged individual fails to comprehend the exact meaning of a given message.

8. They should filter their criticism and avoid any dispute that will make the sender become defensive and fall silent or even enrage them.

9. During the process of communication, the receiver should pose questions to show that they are paying attention and encourage the sender.

On her tenth point, Kneen (2011) summarizes that everything falls under the receiver's ability to stay silent. Besides, like Lunenberg (2010) states, nature has provided humans with two ears but only one tongue which is a kind reminder that one must talk less and listen more.

2.1.3 Main Objectives and Barriers to Effective Communication

The first and foremost objective in communication is that of passing on information. An individual, for example, wishes to divulge some specific information to another individual which can be personal or not. Passing information on is even more vital in terms of an organization where employees have to understand a company's values, missions and principles, as well as the skills needed to complete a task that is within their duties (Bouradas, 1992).

Another main objective is the expression of emotions like happiness, anger, trust, disappointment or fear (Moorhead and Griffin, 1995). Communication is a two-way street and in order to achieve an effective outcome one must be aware of the objectives he / she wishes to meet, as well as the possible barriers – the so-called *noise* – that may get in the way.

As the author, George Bernard Shaw wrote, *''The greatest problem with communication is the illusion that it has been accomplished''* (Shaw, 2011). When it comes to communication, there are several barriers that hinder its effectiveness which have their basis on psychosocial, physical, semantic or process elements (Eisenberg, 2010; Lunenberg, 2010).

Psychosocial barriers refer to everything an individual may have experience, their values, beliefs (Keyton, 2011), cultures (Frederich *et al.*, 2002) and biases, their unique perceptions and their expectations. It is difficult to achieve an effective communication if the sender's experience does not have common ground with the receiver's. Receivers may also be characterized by filtering, as Lunenberg (2010) names it, which means that their needs or expectations may affect them emotionally to a point where they 'filter' what they want to notice in their surroundings. Another important psychosocial barrier is the psychological distance that can exist between senders and receivers and which can be caused by resentment, or anger, for instance (Granek *et al.*, 2013). That also renders the communication process impossible.

Physical barriers constitute any physical distraction that emerges and stands in the way of completing a fruitful communication (Lunenberg, 2010). An example of it could be a phone call when a human resources manager is conducting a job interview in their office.

Another important factor to consider when communicating is the meaning we attach to words and how it can be perceived by others (Keatinge *et. al.*, 2002). **Semantic barriers** may materialize when individuals can infer different things from a word or a phrase which are in collision with what the other interlocutor is trying to convey (Sriussadapom - Charoenngam, 1999).

Ultimately, **process barriers** are likely to exist throughout any step of the communication process. For instance, the sender fails to speak out of fear and decides to stay quiet; as a result, his message fails to come through. Or the receiver is not in a position to decode the sender's message due to his lack of language competency (Granek *et al.*, 2013). Emotions, as a medium, might also affect the effectiveness of the communication (Iacono, 2003) and a receiver may also be otherwise preoccupied with something else and not be an active listener. Subsequently,

the absence of feedback (for example in the form of asking questions) constitutes a process barrier to a productive communication between senders and receivers.

2.1.4 Forms of Communication

Communication may take different forms and at times it does not even need to be a face-to-face one to achieve a satisfactory outcome. Communication may be divided into two major categories: the verbal and nonverbal one. **Verbal communication** consists of ***spoken*** or ***written*** words and can be either ***formal*** or ***informal***. One has to abide by certain phonological, syntactic or semantic language rules while using this type of communication. Formal is what one would use to communicate with a stranger or at a business setting, while informal can be used among friends, family members or co-workers.

Communication can also be ***direct*** when the sender transfers the message to the receiver, thought a single or multiple mediums, without the existence of an intermediary in this process. On the contrary, during ***indirect*** communication the sender involves a mediator in the communication process, one that will transfer the message to the receiver. In this case, the total control of the process does not lie with the sender and there is a chance that the message reaches its destination distorted and thus be misinterpreted.

Nonverbal communication, as opposed to verbal, does not need to make use of words (Greene *et al.*, 1994) and it refers to a wide range of behaviors being used when communicating a message from a sender to a receiver (Hall, 2001; Knapp, 1972; Knapp, 2011). This form of communication is also distinguished from the verbal one to the extent that is can be conscious and deliberate but also unconscious and inadvertent (Hall, 2001). What is extremely significant is that studies have shown than this type of communication has a more influential effect than verbal communication does (Argyle *et al.*, 1970; Argyle *et al.*, 1972). In other words, it can actually ‘speak volumes’, without even ‘speaking’.

2.2 Nonverbal Communication

The term of *nonverbal communication* has been officially established in 1956 by Ruesch, & Weldon (Knapp, 1990). But what does nonverbal communication actually pertain to? Not unlike the aforementioned concept of communication, nonverbal communication can also be quite slippery when it comes to attributing a universal definition to it and many researchers have taken turns at formulating one. Greene (2003) stated that *“it is everything we do except the words that we use in our face to face interactions, so it includes facial expressions, gestures,*

eye contact … even our artifacts, the clothes that we wear, the rings and jewelry that we carry around with us". Thus, this human social interaction is certainly not based on language; it is not expressed verbally or written (Knapp, 1972; Knapp, 2011). Hale (2003) defined nonverbal communication as *"the study of behaviors other than words that create shared meaning between people who are interacting with one another"*. Burleson (2003), however, views it as *"any kind of expression, gesture or symbolic behavior that is either intended to convey meaning or happens to convey meaning"*.

One thing we can most certainly assert is that at most of its part, nonverbal communication is almost implicit and unconscious, albeit being omnipresent. Even though one can stop talking, they can never cease emitting nonverbal cues that other individuals will attempt to give meaning to (Hall, 2001). Even in cases when words cannot adequately express feelings and thoughts or it might be inappropriate and risky to do so, nonverbal cues come for the rescue. Just picture the relatively common eye roll when one wants to express their distrust upon a matter. As many researchers have theorized in the past, nonverbal cues make up for more than 70% of what is being communicated (Barnum and Wolniansky, 1989). In particular, Mehrabian and Williams (1969) stated that as high as 93% of the communication taking place is through nonverbal channels, while Birdwhistell (1955) and Philpott (1983) place that percentage close to 66%.

2.2.1 Types of Nonverbal Communication

Nonverbal communication consists of various different typologies that can be roughly divided to Kinesics, Paralanguage, Proxemics and Physical appearance (Argyle, 1969; Barnum and Wolniansky, 1989; Hall, 2002; Mehrabian and Williams 1969; Sundaram and Webster, 2000). Apart from that, nonverbal communication can also be found in sign and action languages as well (Ruesch and Kees, 1956). Throughout all these channels / sources, the meaning that is conveyed can affect the emotions, thoughts and behaviors of individuals (Knapp, 1972).

2.2.1.1 Kinesics

Since, as mentioned before, kinesics is the richest of all types of nonverbal communication, it is paramount to examine it more closely. The term originates from the corresponding word used to describe movement in Greek language (Burgoon *et al.*, 2009). Kinesics observes and studies how one uses their body movements to communicate nonverbally through various **facial expressions**, **gestures** and **postures** (Birdwhistell, 1955) and is the most visible type of nonverbal communication that gives out the most signals. As the renowned anthropologist

Birdwhistell (1955) points out kinesics has its roots way back since Darwin[1] who stressed the fact that beings stimulate each other through these three sources. Throughout history, researchers have extensively studied kinesics in relation to multiple characteristics. Burgoon *et al.* (2014), for instance, have noticed that there are differences in kinesic behavior that can lead us to knowing when one is being truthful or deceptive. Bisdwhistell (1955) in his analysis of kinesics suggested that there cannot be a universally attributed meaning to certain kinesic movements and that they are also open to interpretation especially among different cultures. However, Paul Ekman who mostly focused his research in facial expressions, argued that statement stressing out that there can indeed be universal meaning conveyed through specific expressions (Ekman and Friesen, 1971).

Facial Expressions

As most nonverbal cues, facial expressions are involuntary, as well as deliberate, regardless of the fact that individuals may occasionally try to conceal them (Ekman, 1997). American psychologist Paul Ekman and his team (1976) have identified **seven universal facial expressions** being used when one wants to express emotions like happiness, sadness, surprise, anger, disgust, contempt or fear by moving certain muscles in one's face. They concluded that people usually recognize and decode those facial expressions in the same manner (Ekman *et al.*, 1976). However, each time people communicate their facial expressions might constantly and rapidly change. New research techniques have provided us with the necessary tools to decode these so-called micro expressions which can last for just a split of a second but nonetheless conceal our most sincere thoughts and emotions. Apart from micro expressions, though, even neutral faces convey meaning and are believed to be attributed with certain personality traits. Those that are perceived to be of a more positive demeanor are attributed with traits such as happiness and the more negative ones with disgust or fear (Said *et al.,* 2009). In addition, individuals are able to better identify fear through facial expressions in males rather than females (Trnka *et al.*, 2015).

One widely studied facial expression in literature is **smiling**. Bayes's findings (1972) concerning smiling confirmed the prevalent thought of many researchers up to that point that nonverbal cues play a significant role when communicating emotions. He found that smile is the leading and most widely understood nonverbal cue among others when it comes to identifying feelings of affection. Moreover, Lau's experiment (1982), where he presented his

[1] For more see: Darwin, C. (1873) *Expression of Emotions in Man and Animals*, New York.

subjects with photographs of smiling and nonsmiling individuals, concluded that smiling has a more positive effect on a person's evaluation regarding his / her likeability and intelligence. Burgoon *et al.*'s (1984) videotaped scenarios also concluded that the absence of smiling leads to inference of detachment and mistrust.

Gestures

As Kendon (2004) theorizes, gestures refer to certain body actions taking place when one is attempting to communicate a message which can either be accompanied by speech or may operate independently of it. They are particularly complex since the same gestures can convey a totally different meaning (Graham and Argyle, 1975), especially in different cultures. Graham's and Argyle's (1975) experiment found that gestures help transfer the message more accurately. For instance, from the widely recognized gesture of a thumb up signifying that all is good, to pointing a single finger towards a thing or a person to make others focus their attention there (Black, 2011). Even the classic head nodding to show that one agrees with a statement is widely recognizable among certain cultures (Tipper *et al.*, 2015).

Posture

Posture, as opposed to gesture, refers to motionless body positions[2]. Burgoon and Hale (1988) and Burgoon *et al.* (1989) studied posture in combination with other nonverbal behaviors and concluded that ample presence of these behaviors (in terms of forward lean, close proximity, various gestures and eye contact) was related to trust, dominance, likeness and self-assurance. Burgoon *et al.* (1984) also found out through their videotaped scenarios that **forward lean** was interpreted as having greater trust and involvement than backward lean. Other studies have also revealed that a more **open posture** leads to that particular individual being regarded as more active and dominant and, what is more, subjects are more likely to shift their opinion towards what they are advocating (McGinley *et al.*, 1975).

Eye Contact

How many times have you heard people claim that 'eyes are the window to the soul'? Eye contact is another avidly studied nonverbal behavior around the globe. Many researchers theorized that multiple factors regulate how much **eye contact** is being used. Those may have to do with the individuals' intrapersonal relationship, their gender or race and aspects of their personality as well (Ellsworth and Ludwig, 1972; Kendon, 1978). They also concluded that eye

[2] Bull, P. (1987) *Posture and Gesture*, Oxford: Pergamon Books, as cited in Hall, J. A. and Knapp, M. L. (eds.) (2013) *Nonverbal Communication,* Series: Handbook of Communication Science **2**: de Gruyter Mouton.

contact is greater when one is listening as opposed to when they are speaking (Kendon, 1967). What is more, extroverts are found to tend to present more eye contact than introverts (, Kendon and Cook, 1969; Mobbs, 1967) and distance is also recorded to affect the amount of individual and mutual gaze and its length (Argyle and Ingham, 1972). Constant gaze has also been recorded to convey positive characteristics such as intimacy, trust or dominance (Burgoon *et al.*, 1984).

2.2.1.2 Paralanguage

Paralanguage pertains to several characteristics that have to do with speaking but are nonverbal ones. Such characteristics include vocal pitch, amplitude or loudness, pitch variation, pauses and fluency while speaking. Each of them has been attributed to certain feelings and emotions. A typical example of that would be higher vocal pitch, a nonverbal cue that is usually related to the stress or anxiety that an individual might be experiencing (Hall, 2001). Research up to this point has posited that individuals can deduct how another person is feeling simply by paying attention at their voice characteristics (Marsden, 1965). A person's tone of voice, for instance, has been found to have more significance that the actual content of what is being said (Mehrabian and Wiener, 1967).

2.2.1.3 Proxemics

A great deal of research (Abele, 1986; Breed and Ricci, 1973; Mehrabian, 1968a, 1968b; Mehrabian and Williams, 1969; Trout and Rosenfeld, 1980) that studied proxemics along with other nonverbal behaviors revealed that when there is close proximity, a relaxed posture and touch, they are interpreted as having a connection, warmth, empathy and even dominance. Burgoon *et al.*'s (1990) videotaped judgments on 60 public speakers also revealed that close interpersonal distance, kinesic immediacy and relaxation, fluency and variety in voice pitch, along with positive facial expressions were believed to convey more persuasiveness.

2.2.1.4 Physical Appearance

Physical appearance has been observed to greatly influence the message that is being transferred between a sender and a receiver. Either we are aware of it or not, we all tend to draw judgments from a person's appearance. By physical appearance we refer to various characteristics such as: height, weight, smell, skin color, clothing material and other wearables as well (Barber, 2001; Carney *et al.*, 2005; Markley and Davis, 2011; Schmid and Hall, 2004).If an individual is physically attractive, he / she are more likely to persuade the other side (Chaiken, 1979). In

retail, for instance, physically attractive salespersons have been found to be on the receiving end of positive evaluations and are regarded more credible as well (Patzer, 1983).

2.2.2 Antecedents and Consequences of Nonverbal Communication

Nonverbal communication is a field whose study is interdisciplinary as it interests many different sciences, like psychology, sociology (Palmer and Simmons, 1995), anthropology, communication, ethology, economics and even legal studies (Hall, 2001).

To grasp the importance of nonverbal communication one should simply consider its role in the communication process in relation to the verbal message that is being communicated. On one hand, nonverbal communication can be repeating, substituting or emphasizing a verbal message, while on the other, it can be contradicting, accenting / moderating or regulating it (Graham and Argyle, 1975). Research shows that in case of nonverbal cues contradicting verbal ones, subjects tend to put their faith in the former rather than the latter. This is mainly attributed to the fact that we are predisposed to address nonverbal messages before verbal ones since those predate spoken language in human evolution and are also the initial form of communication in an individual's lifespan (Burgoon *et al.*, 2009). To better comprehend that notion let's consider the first years of infants when they cannot use words yet but they become capable of communicating in other nonverbal ways (such as crying, grasping, smiling) by decoding the existing nonverbal cues in their environment. Moreover, what is undeniably remarkable is the fact that, apart from being omnipresent, nonverbal communication can be universally understood. As Edward Sapir (1949) states: *''We respond to gestures with an extreme alertness and, one might almost say, in accordance with an elaborate and secret code that is written nowhere, known to none and understood by all''* (p. 556). Think of all those different occasions when travelling abroad to a place where you do not speak the language and just by smiling and nodding at the person waiting on you at a café they can simply deduct that you are satisfied with their service. That alone demonstrates the indisputable power of nonverbal communication.

Miller *et al.* (1967) posited that nonverbal communication is linked to certain intended behaviors. Customers, for example, may infer whether a service provider is attentive to their needs by observing their posture and different gestures (Knapp, 1980; Sundaram and Webster, 2000). Some nonverbal cues, however, convey a stronger meaning than others. It has been observed that individuals tend to pay more attention to negative nonverbal cues that may show lack of involvement or a biased opinion than positive ones (Burnett and Badzinski, 2005).

Moreover, research has found that individuals may even 'affect' behavioral outcomes by altering their nonverbal cues through mirroring the other individual's cues to establish rapport in a dyadic interaction (Burgoon *et al.*, 1995).

2.2.3 Factors Affecting the Function of Nonverbal Communication

Hall (2001) stresses that coding and studying nonverbal behavior can be divided into two approaches: the first one looks for typical said behaviors among groups (for instance, different culture, age or gender), while the second one investigates variations within the same group of people (taking individual personality factors into consideration). In general, we can divide the factors that affect nonverbal communication in individual, social and organizational characteristics.

As far as the **individual factors** are concerned, personality traits can be found to affect the function of nonverbal communication (Burgoon, 1991). P*ersonality* as an individual characteristic is believed to affect the way people interpret nonverbal cues, especially in service encounters (Gabbott and Hogg, 2001). Towards that direction, Jensen (2016) used the Big Five Personality Traits model to study nonverbal behavior and concluded that extraverts use more eye contact and close proximity and value expressive faces and gestures. He also discovered that whereas the openness dimension relates to a more direct verbal style, agreeableness identifies with a more implicit communication as the nonverbal one.

When attempting to identify **social characteristics**, *socioeconomic status* is an important factor. As Kraus and Keltner (2009) posited after studying nonverbal cues in senders from higher and lower socioeconomic status backgrounds, the former were observed to use more disengaging nonverbal behavior (in that case it was the act of doodling) during interactions, while the latter were observed to engage more (by nodding their head and laughing). *Culture* also plays an important role in the way nonverbal communication conveys meaning, since different cultures can be characterized by different nonverbal behaviors. It is obvious that not all meaning can always be deducted properly and there are many differences throughout various cultures or even within the same ones leading to a misinterpretation of nonverbal cues (Burgoon et al., 2009). Japanese women, for example, have been found to have a higher vocal pitch than Dutch (Van Bezooijen, 1995). Most researchers have also found substantial differences for an array of nonverbal behaviors when it comes to *gender* (Briton and Hall, 1995) and even decades ago certain stereotypes regarding gender and nonverbal communication existed (Kramer, 1977). One thing that is widely believed is that women are better at decoding nonverbal

behavior than men (Hall, 1978). Hall (1984) also found that females smile more often than males do and in addition they are indeed expected to do so. They are believed to be more expressive in their behavior (Briton and Hall, 1995) by using their face and hands and they engage and care more about their interlocutor (Kramer, 1977). When observing males and females Martin (1995) concluded that body posture is also different among them since men usually cross their ankle over the other knee and women cross their ankles or knees together. What is more, Chaiken's (1979) experiment found out that physically attractive females are considered to be more persuasive than physically attractive males.

Nonverbal communication constitutes an important aspect in the **organizational** settings as well, even though it is not as much researched as in other areas. Leadership, power and status perceptions are usually studied under the scope of nonverbal communication (Hall *et al.*, 2005). A knowledge of the nonverbal cues one emits is of the utmost importance in the workplace insofar as that it can provide aid in understanding coworkers' and customers' emotions and control the nonverbal messages that are being conveyed (Phillips, 1993). Gkorezis, Bellou and Skemperis (2015) have found that nonverbal communication plays a crucial role in organizational culture and leaders' kinesics, in particular, can have a positive effect on subordinates. Leaders' positive paralanguage and kinesics have also been observed to affect how subordinates view the leaders' effectiveness and the trust they put in them afterwards (Bellou and Gkorezis, 2016). Furthermore, high status has been found to be associated with a 'relaxed' posture and a not so attentive attitude (Remland, 1981) and if leaders display less of these high-status cues they are regarded as more thoughtful (Remland, 1984). Apart from this, research has also come to the conclusion that one can simply create a sense of higher power by altering their nonverbal cues and body posture in particular. Carney, Cuddy, and Yap (2010) concluded that a few minutes of maintaining an expansive body posture (power posing) can alter one's feeling of being more powerful and in charge.

2.3 Service Quality

2.3.1 Defining Service Quality

Service, as opposed to a product, can be characterized by its ***intangibility***. For that, it is difficult to measure its advantages and customers take other things in consideration when assessing it: word of mouth, accessibility or even physical aspects (Edvardsson *et al.*, 2005). Additionally, once you consume a service it ceases to exist (***perishability***). You cannot go back and have a

look at it once more as you would do with a, say, piece of clothing that you have purchased. This attribute places all the more importance on service providers delivering exceptional services (Edvardsson *et al.*, 2005; Ghobadian *et al.*, 1994). It is also virtually impossible to experience the exact identical service again, since it comprises a bundle of circumstances and specifications making it unique (***heterogeneity***). Furthermore, the fact that the production and consumption of a service take place at the exact same moment (***inseparability***) renders defining it a rather complex task (Edvardsson *et al.*, 2005; Ghobadian *et al.*, 1994; Kotler and Keller, 2011).

Towards that direction, Gummesson (2007) draws a clear line between the static nature of a product and the perpetual movement of services. On the other hand, Grönroos (2001) views the subject from a customer perspective inasmuch as the fact that service is merely a solution to a given customer's problem.

Quality is an equality unfathomable concept since there is no one-size-fits-all definition when it comes to it (Sower and Fair, 2005; Wicks and Roethlein, 2009). There are many parameters to be considered when attempting to define it; customers' perceptions and the principle specifications of a product or service can be among them.

Being cognizant of the aforementioned, it comes as no surprise that **Service Quality** has been an extensively studied subject in service marketing literature since as back as the 1980s. Thus, it is becoming more and more pivotal to strive for quality in service encounters, especially in such a highly competitive environment as the one that companies have to deal with nowadays. Parasuraman, Zeithmal and Berry (1985) define service quality as "*the global evaluation or attitude of overall excellence of services*" and Zeithaml, Parasuraman and Berry (1993) highlight its ***perceived*** nature insofar as what customers believe that they experience during a service encounter. In general, there can be found two schools of thought: the *Nordic* one, which is based on Grönroos's (1984) model of two dimensions and the *North American*, which is based on Parasuraman's, Zeithmal's and Berry's (1988) SERVQUAL model of five dimensions. Parasuraman, Zeithmal and Berry (1985) had first identified ten service dimensions, which they later reduced to five after applying and validating them though research.

Zeithaml *et al.* (1993) posit that customers may perceive service quality in many different ways and they are based on multiple factors when requested to assess it. In fact, many researchers define perceived service quality as the difference that exists after customers compare the service

they expected to receive with the actual service they think they received (Grönroos (1984); Parasuraman, Zeithmal and Berry, 1985, 1988, 1994).

Service **Q**uality = **P**erceptions – **E**xpectations

Perceived service quality is found to be directly affected by the service provider's performance; the way the customer perceives that performance level (Bolton *et al.*, 1991).

2.3.2 Service Quality Models and Dimensions

With a view to measuring the quality of service that customers believe they experienced, a few models made their appearance. Each one of them focuses on various distinct dimensions. Grönroos (1984) model divides service quality in Technical and Functional, while Parasuraman's, Zeithmal's and Berry's (1988) SERVQUAL identifies five dimensions: Reliability, Responsiveness, Assurance, Empathy and Tangibles. Finally, the GAP model recognizes 5 gaps in perceived service quality: the knowledge gap, the policy gap, the delivery gap, the communication gap and the service gap (Parasuraman, 1988). Additionally, apart from these models, many other more industry-specific ones have also materialized. For instance, in the Information Technology (IT) sector, Berkley and Gupta (1994) proposed a new, adapted to that industry model. Broderick and Vachirapornpuk (2002) introduced an internet banking model, while Babakus and Mangold (1992) adapted the SERVQUAL model to healthcare industry.

Grönroos Model

Finish academic Christian Grönroos was the first one to come up with a model to measure perceived service quality. That model was built on the notion that customers take two dimensions into account when judging service quality: The Technical and the Functional Quality (Grönroos, 1984), both of which build up corporate image. Technical aspect of the quality of service refers to ***what*** customers receive as an outcome of the service encounter. The functional one applies to ***how*** customers received said service from the provider; the process of delivering service. According to Grönroos (1984), technical quality encompasses skills and professionalism, while functional consists of other aspects like attitude and behavior, reliability and trustworthiness, accessibility and flexibility and recovery. Other important aspects, such as reputation and credibility fall under the corporate image of an organization. However, this model has not been applied in research concerning service quality, mostly because it lacks tangible measurement tools. In other words, it is more theoretical than practical and that is why it is not popular in research being conducted nowadays.

GAP Model

Parasuraman, Zeithmal and Berry (1991) divided service expectations in two categories: desired and adequate. Desired level is the one that customers wish that the service quality reaches, while the adequate is the one that they are ready to accept. The GAP Model was conceptualized in 1985 by Parasuraman, Zeithmal and Berry to explain the causes for unsatisfactory delivery of a service. Their focal point is on the gaps that can be created from difference in customers' expectations prior to a service encounter and their actual perceived quality of service. Said gaps are classified into 5 categories with reference to knowledge, policy, delivery, communication and service (Figure 2).

Gap 1: Customer expectation – Management perception gap *(knowledge gap)*

The first gap refers to the difference between the expected quality of service in a given target market and the way the management of a company actually perceives it. That might occur when companies fail to conduct thorough marketing research and thus their results do not depict the market's reality. Even problems in communication can lead to this gap, especially when information is compelled to pass through layers and layers of hierarchy to finally reach its destined receiver (Zeithaml *et al.*, 1988).

Gap 2: Management perception – Service quality specification gap *(policy gap)*

Policy gap is relevant to the existing disparity between the ways in which management perceives customers' expectations and how they decipher those expectations with certain processes and specifications. If management is not geared towards service quality and fails to set S.M.A.R.T. (**S**pecific, **M**easurable, **A**ttainable, **R**elevant, **T**imely) goals (Papadakis, 2016) and systematize its various tasks, this gap will continue to widen even more.

Gap 3: Service quality specifications – Service delivery gap *(delivery gap)*

Delivery gap applies to the difference amidst the specifications of the quality of service and the actual service that was delivered. An obvious cause for this gap might be a technical malfunction. However, other organizational determinants might also affect the emergence of this gap. If there is a bad employee – job fit or inadequate employee training and supervision, there a problem in service delivery is more likely to make its appearance (Zeithaml *et al.*, 1988).

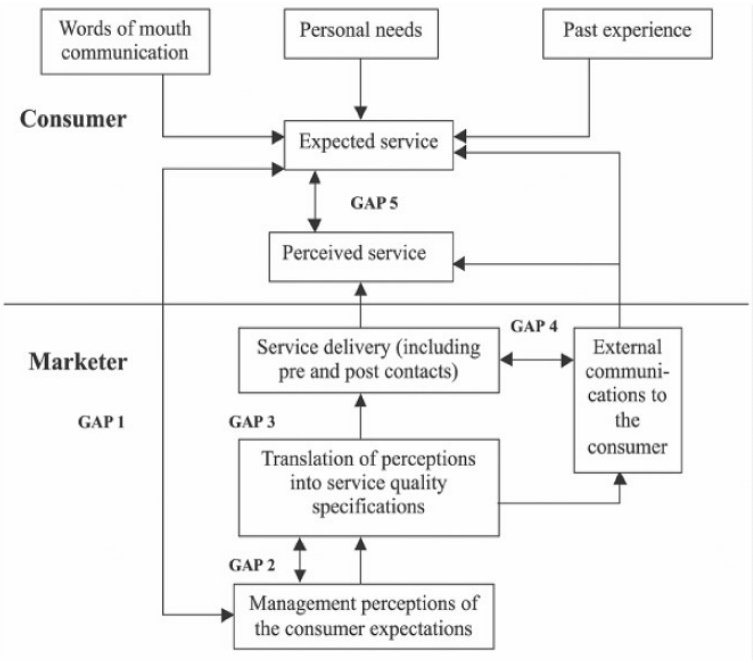
Gap 4: Service delivery – External communications gap *(communication gap)*

Communication gap has a bearing upon the intentions of the aforementioned service delivery and the message that is conveyed to customers in the end. If the cooperation of both sales and operations departments of a company is not adequate but also if employees of the same hierarchy are found lacking in communication, the service cannot be delivered the way it was intended (Zeithaml *et al.*, 1988). Another commonly found causality for this phenomenon is some companies' tendency to make promises that they fail to deliver, resulting in the expansion of the communication gap.

Gap 5: Expected service – Perceived service gap *(service gap)*

This last gap pertains to the difference between customers' expected service quality and the perceived one and bridging it highly depends upon bridging the other four gaps. Parasuraman (1985) supports that the smaller this particular gap, the more increase there is in quality of service. Customer dissatisfaction usually has its roots on this service gap.

Figure 2. GAP Model of Service Quality



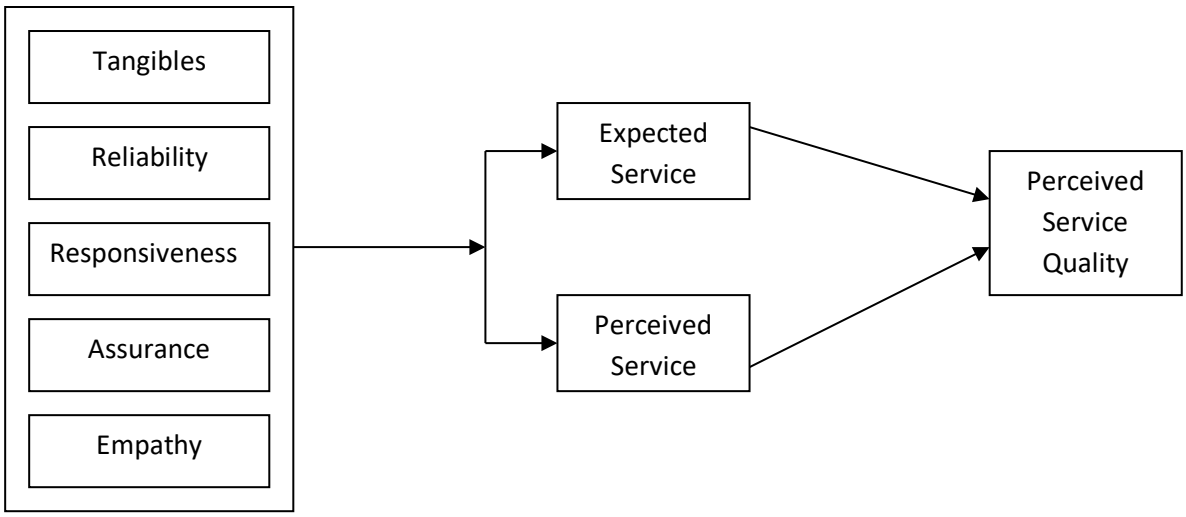
Source: *Parasuraman Zeithmal and Berry (1985)*

SERVQUAL Model

Parasuraman, Zeithmal and Berry first introduced the multi-dimensional SERVQUAL Model to study service quality in 1985 in an attempt to bridge Gap 5, the service gap. SERVQUAL

has been in the limelight of most research conducted by academics and practitioners, which has rendered it quite popular in comparison with other existing models measuring service quality. That first model introduced in 1985 consisted of 10 service dimensions which were: Reliability, Responsiveness, Competence, Access, Courtesy, Communication, Credibility, Security, Understanding the customer and Tangibles. Later, in 1988, after applying and validating it, they reached the decision to restrict those dimensions to only 5 (Figure 3): Reliability, Responsiveness, Assurance, Empathy and Tangibles (Parasuraman , Zeithmal and Berry, 1988). The SERVQUAL questionnaire consists of 22 items with regard to expected service and 22 more inquiring the perception of the actual service that was delivered.

Figure 3. SERVQUAL Model



Source: *Own process from Parasuraman, Zeithaml, and Berry (1988)*

Tangibles

The SERVQUAL Questionnaire begins with ***4 items*** investigating the more observable qualities in a service encounter. Those refer to the personnel engaged in said service interaction, the physical facilities and the equipment.

Reliability

Parasuraman, Zeithmal and Berry (1988) describe the dimension of reliability as the competence in meticulously delivering what was promised in a service encounter. This is achieved through ***5 items*** ranging from questioning about prompt service response exactly when it was promised to, to being dependable, reassuring and accurate.

Responsiveness

The *4 items* about responsiveness in the SERVQUAL questionnaire research the promptness of the service and whether or not those involved in it are willing to provide aid to customers and response to their requests.

Assurance

This dimension consists of *4 items* inquiring whether employees can instill trust on customers, make them feel safe and give out an air of confidence in having the best tools to perform their job.

Empathy

The final *5 items* on the SERVQUAL questionnaire relate to empathy and ask customers whether the service provider understands and takes their personal needs into consideration, offers them their undivided and individualized attention.

Despite its wide acceptance as a research instrument, though, the SERVQUAL model has been on the receiving end of some critique. Butle (1996), for instance, presented his concerns on that model on grounds of practical and theoretical aspects. Most of the critique also circles around the length of the survey and the validity of the five dimensions. Towards this direction, Smith (1995) questions the validity of it in cases when the context of the research needs to be adjusted or altered to better depict a specific industry. As far as the length of the questionnaire is concerned, the bundle of the 22 expectation questions and the 22 corresponding perception ones account for needing to dedicate a substantial amount of time to complete it. What is more, if the researcher adds demographic questions to it, the 44 ones will rise even higher as to 60 or more rendering it tiring and rather boring to go through with it until the end. Nonetheless, the fact that SERVQUAL's pioneers highlight that it can be adapted to better fit the needs of different sectors (Parasuraman, Zeithmal and Berry, 1988), still makes it the primary choice in research ranging from banking industry to healthcare.

SERVPERF Model

Although the SERVQUAL model is widely applied, the need for a more appropriate one in certain sectors like retail led to the emergence of SERVPERF by Cronin and Taylor in1992 (Dabholkar *et al.*, 1996). SERVPERF has a total of only 22 questions about customers' perception; something that eliminates the length problem that many have criticized on SERVQUAL. This model focuses on performance (perceived quality of service) as the main aspect that needs to be examined so as to determine service quality. It uses the same 5 dimensions as SERVQUAL (tangibles, reliability, responsiveness, assurance and empathy) but without measuring the expectations – perceptions gap. It just fixates on the perceptions viewpoint.

2.4 Customer Satisfaction

2.4.1 Defining Customer Satisfaction

Based on existing literature, no uniform accepted definition of customer satisfaction has been adopted (Giese and Cote, 2002). Some theorize that it is the outcome that stems from the experience of having consumed a service or a product (Bitner *et al.*, 1990); whether it has succeeded to meet one's needs and expectations. Oliver (1980) defines customer satisfaction as a direct result of service quality. Customers compare the quality of service they received with what they expected to receive in the first place. Churchill and Surprenant (1982) argue that *"customer satisfaction is an outcome of purchase and use resulting from the buyers' comparison of the rewards and costs of the purchase in relation to the anticipated consequences"*. The most common definition of customer satisfaction circles around the notion that it is a feeling resulting from the process of comparing what one expects to get from a transaction and what they ultimately receive (Armstrong and Kotler, 1996). In other words, customer satisfaction can be defined as an emotional response to a service that one received by evaluating it in relation to its cost (Rust and Zahorik, 1993). Additionally, according to Boselie *et al.* (2002), employees hold a crucial part in customers' assessments of satisfaction since their overall image is under the microscope during a transaction.

What is clear is that when we refer to customer satisfaction, we do it under the scope of a specific service encounter and the way customers experience it (Cronin and Taylor, 1992). Still, customer satisfaction has received extensive attention in the marketing literature since it can be related to various future behavioural intentions, such as repurchase (Rust and Zahorik, 1993) and loyalty (Anderson and Sullivian, 1993). Customers that are satisfied are vital to a service

provider since they may transfer their experiences through word of mouth (Morgan *et al.*, 2005). Customer satisfaction is also a key element to measure value in a business (Sabir *et al.*, 2014). For these reasons, many researchers support the notion that it should be what drives companies around the world (Mittal *et al.*, 1999; Morgan *et al.*, 2005). Service providers should always strive to obtain information on how to come up with new and innovative ways to increase customers' satisfaction (Oliver, 1999).

One thing is for sure. Customers look for different aspects in a service or product that will eventually render them satisfied. Apart from the core product other parts of it, such as the way it is delivered, play an important role in generating value for customers. On that account, companies should get to communicate and know their customers better in an attempt to cultivate a customer-oriented philosophy (Hill, Brierley and MacDougall, 2003).

Research on customer satisfaction has produced quite a few interesting findings, like Bitner's (1990) conclusions that the environment has an effect on customer satisfaction. Bitner *et al.* (1990) also conducted a research on airlines, hotels and restaurants to identify which events during the service encounter lead to satisfactory assessment of service and which to a dissatisfactory one using the Critical Incident Technique. Substantial research in the past also highlights the link between a service provider's performance and customers' satisfaction (Anderson *et al.*, 1994; Bolton, 1998). Additionally, at times, customer satisfaction has been found to play a mediating role in the relationship between service quality and customer loyalty (Caruana, 2002). Moreover, it has also been proven that value can moderate the relationship between service quality and satisfaction (Caruana *et al.*, 2000).

Some of the variables that influence customer satisfaction pertain to the price at which a product or service is being offered, the quality of the way that it is being served, and the environment in which the overall service process takes place (Sabir *et al.*, 2014). Many studies show that customer satisfaction is directly influenced by the after-sales behavior and the treatment they receive from a service provider (Yi, 1990). Nowadays, most researchers distinguish the satisfaction that consumers get from tangible goods and the one they receive from services (Aburoub *et al.*, 2011).

Over the years the perspective from which customer satisfaction has been studied has changed by shifting its interest towards customers' emotions. Many researchers value customer satisfaction based on emotions such as interest, surprise, anger and the feeling of the right choice (Cronin *et al.*, 2000). Research results conclude that customers who receive a product

or service whose price was equivalent to its quality tend to be more satisfied than those who do not enjoy the outcome of a service compared to the price they paid for it (Zeithmal, 1988). This is the phenomenon of objective value. Objective value can be interpreted as the consumer's gain in accordance to what they sacrificed for a given product or service. Customer satisfaction is strongly related to objective value and their outcome can also influence future consumer intentions (Anderson *et al.*, 1994; Lemmink *et al.*, 1998).

2.4.2 The Disconfirmation Paradigm

Oliver (1981) introduced the expectation-disconfirmation theory in service and retail industries. Many researchers distinguish consumers' expectations about the nature of a product or service and their cost compared to the benefits of other ones. Performance by itself does not affect overall customer satisfaction. However, they are directly and significantly affected by consumer expectations (Olson and Dover, 1976). Disconfirmation is the result of the final performance of a service process compared to pre-existing expectations and has a profound effect on customer satisfaction. Oliver (1977), however, strongly supported the importance of separating disconfirmation from expectations because he believed that the first parameter had independent effects on satisfaction. Customer satisfaction is conceptually the result of opportunity cost: a comparison made by consumers of what they sacrificed for a good or service and what they ultimately received. That is, their expectations and final gains.

The disconfirmation paradigm revolves around the concept that what customers perceive in a service interaction is characterized by either confirming or negating their prior expectations (Mohr, 1982). This theory has contributed tremendously to research undertaken on grounds of customer satisfaction. Disconfirmation occurs when there is a dissonance between what was expected in advance of a service encounter and what was eventually delivered. At first, this may sound similar to what was mentioned regarding service quality but the difference lies in the fact that satisfaction is something that customers experience after they made their judgments about a given service, while quality is not (Bolton and Drew, 1991; Cronin and Taylor, 1994; Oliver, 1980; Parasuraman, Zeithmal and Berry, 1988;). What is more, as Churchill and Surprenant (1982) posit, these expectations that people have are mainly based on the service provider's performance, while expectations in service quality portray needs (Boulding *et al.*, 1993, Zeithaml *et al.*, 1993). In general, positive disconfirmation leads to increased satisfaction, whereas negative disconfirmation leads to decreased satisfaction.

2.4.3 Factors Affecting Customer Satisfaction

According to Zeithaml and Bitner (2003), customer satisfaction may be influenced by several factors. Those vary from the characteristics of the product or service (quality, features, price) to customers' emotions and other individuals' evaluations of a product or service. The 4 P's of the marketing mix (Product, Price, Promotion, Placement) are the ones that one first becomes acquainted with (Kotler and Armstrong, 2007) but there are other factors not to be made light of, that greatly affect customer satisfaction. In general, those can be divided into cultural, social, personal and psychological factors (iResearch Services, 2018).

Cultural factors can be divided into three categories and they are important when assessing consumers' needs and their behavior. The first one, *culture*, embodies values, beliefs and norms that individuals have grown with. *Sub-culture* is a smaller group within a culture and may refer to nationality, geographic regions (that may share different preferences in clothing, food depending on climate) religion or race. The last one, *social class*, includes those that belong in the same group sharing the same education, income, wealth or other common factors (Kotler and Armstrong, 2007).

Social factors may also weigh in when one is making judgements on a specific product or service. Other groups' perceptions may have an impact on satisfaction, like what friends, family members, co-workers, social networks or other customers believe about said product or service (Kotler and Armstrong, 2007). That is, negative word of mouth from friends and family might affect our own perception of a service or product to a great extent and lead to dissatisfaction. Age and life cycle are also important since consumers tend to alter their purchasing needs throughout different states in their lives.

Personal factors are always to be taken into consideration when seeking customer satisfaction. Age, occupation, personality, education, economic status or even an individual's lifestyle affect the way they assess a product or service experience (Kotler and Armstrong, 2007). If a product, for example, is thoughtfully designed to cover consumers' needs and give value but is beyond their purchasing ability its sale will surely plummet (iResearch Services, 2018).

Ultimately, **phycological factors**, like motivation, perception, learning and different beliefs and attitudes cannot be overlooked by service providers. Consumers need to be motivated to act towards a purchasing behavior if they feel that their need can be fulfilled. Through learning, they also acquire experience which may be the causal effect of certain changes in their behavior (Oliver, 1993).

2.5 Antecedents of Service Quality and Customer Satisfaction

Most of the existing literature links service quality and customer satisfaction (Cronin and Taylor, 1992; Cronin and Taylor, 1994) and while many practitioners tend to use these two constructs in the same manner, among academic circles they are considered to be undeniably distinct (Oliver, 1980, 1993; Bitner, 1990; Boulding *et al.*, 1993). Many researchers have also argued that service quality is an antecedent of customer satisfaction (Anderson and Sullivan, 1993; de Ruyteretal. 1997). Others, however, argue that customer satisfaction is the one that precedes service quality (Patterson and Johnson, 1993; Bolton and Drew, 1991). Research has shown that service quality has a significant influence on customer satisfaction, which in turn influences repurchase intentions (Sweeney *et al.* 1997; Cronin *et al.* 2000). Towards that direction, Olsen and Caruana's (2002) research has concluded that there is a strong, positive relationship between repurchase intention and satisfaction. Furthermore, Bitner's (1990) study concludes on the notion that we should perceive satisfaction as an antecedent of service quality, while other existing research suggests that the opposite is true (Cronin and Taylor, 1992). What is more, Spreng's and Mackoy's (1996) empirical examination of a model of service quality and customer satisfaction has concluded that these two concepts are clearly distinct. Oliver (1997) also highlighted the separate nature of service quality and customer satisfaction by suggested that service quality judgments are more specific (special characteristics or key aspects), while customer satisfaction judgments are more holistic (overall experience). The author also links cognitive judgments to service quality and emotional judgments to customer satisfaction. Anderson, Fornell and Lehmann (1994) also distinguish the two concepts by stressing that the customer has to have completed a transaction to be able to define satisfaction, while the same is not true for defining its quality.

No matter the distinction between service quality and customer satisfaction, they are undeniably linked at many cases. A great deal of researchers believes that more often than not, satisfaction is determined by the quality of a product or service (Levesque & McDougall, 1996). Gilbert *et al.* (2004) emphasize that service providers that offer higher quality service gain more and more satisfied customers. For that reason, when studying satisfaction, one cannot neglect service quality. Higher perceptions of service quality often lead to higher levels of customer satisfaction (Kumar *et al.*, 2009; Parasuraman, Zeithmal and Berry, 1985), using their SERVQUAL model, posit that ***expectations*** play an important role in the relationship between service quality and customer satisfaction. That is, when the expected service is higher than the perceived one, it leads to a less satisfactory quality of service and therefore to customer dissatisfaction. Au

contraire, when the perceived service meets the standards that were expected, it leads to a satisfactory quality of service and therefore to customer satisfaction. In case the perceived service exceeds customers' expectations to the highest degree, satisfaction is even more elevated, and it is regarded as optimal.

2.6 Nonverbal Communication in Service Encounters

Solomon *et al.* (1985) portray service encounter as an interaction, usually between two individuals, where the exchange that is taking place is a close, interpersonal one. More often than not, people decide to buy a product or a service not because of its characteristics or good ratings, but rather due to the fact that the salesperson made a good impression on them (Das, 2016). Most research on nonverbal communication in service interactions circles around how kinesics, proxemics, paralanguage, and physical appearance may affect customers' evaluation concerning friendliness, courtesy, empathy, competence and credibility (Sundaram and Webster, 2000). As it was mentioned earlier, those multiple and diverse nonverbal cues may convey different meanings and the extent of their impact depends on the way they are projected and interpreted. Take eye contact, for example. If a salesperson makes continuous and excessive eye contact, customers may find it aggressive and if he / she avoids it they may think he / she has something to hide (Thomas, 1992).

However, albeit one can come across a plethora of research examining the influence that advertising, characteristics of product or physical surroundings have during service encounters, fewer exist that consider the regulating role of employee's nonverbal cues (Bashir and Rule, 2014; Gabbott and Hogg, 2001; Orth *et al.*, 2013). Even fewer study the service providers' nonverbal behavior and not the customers'. Bashir and Rule's (2014) recent study has reached to the conclusion that consumers judge based on appearance. Their subjects thought that information was more accurate when the individual wore a red color in contrast to white or blue. Sundaram and Webster (2000) also studied the employee – customer interaction from a nonverbal communication scope and concluded that paralanguage, kinesics, proxemics and physical appearance affect customers' evaluations of service. They linked it with assessment of friendliness, empathy and whether employees' can be trusted or they are credible and competent of doing their job. Furthermore, Mehrabian (1986a), when researching interviewers and interviewees, posited that close interpersonal distance and eye contact are used when wanting to achieve a positive outcome.

2.7 Conceptual Framework

The present research focuses on exploring the relationship of nonverbal communication and customer satisfaction through perceived service quality. It is going to be applied to clinical interactions where effective communicating during that exchange is of the highest importance and expressive nonverbal cues (more forward lean, closer interpersonal distance, nodding and gazing) play a crucial role to that end (Hall *et al.*, 1995). To be able to comprehend the importance of that statement, one should just think of such an interaction when the patient experiences excruciating pain. If doctors were unable to decode patients' pain, they wouldn't know when to stop or how to treat them. The facial expressions attributed to pain (Ekman and Friesen, 1978) aid towards that direction. Most existing research in clinical interactions circles around doctors' nonverbal behavior and how it affects patients. Many posit that when doctors exhibit better nonverbal communication skills, patients' satisfaction is greater (Griffith *et al.*, 2003). Griffith *et al.* (2003), in particular, observed that outcome when doctors were smiling, had eye contact and leaned forward, along with other nonverbal cues. Thus, the first two hypotheses can be formulated as follows:

Hypothesis 1. *Doctor's nonverbal communication is positively related to customer satisfaction.*

Hypothesis 2: *Doctor's nonverbal communication is positively related to service quality.*

Service quality is widely acknowledged as pivotal to generating competitive advantages to an organization (Parasuraman, Zeithmal and Berry, 1985; Parasuraman, Zeithmal and Berry, 1991). Its potent is high since it can lead to succeeding at satisfying customers (Ladhari *et al.*, 2011). Moreover, as Bitner's (1990) study concludes, customer satisfaction should be perceived as an antecedent of service quality. When the perceived service meets the standards that were expected, it leads to a satisfactory quality of service and therefore to customer satisfaction (Parasuraman, Zeithmal and Berry, 1985). That is why service quality is usually measured by using Zeithaml's, Berry's and Parasuraman's (1996) SERVQUAL model, which takes expectations and perceptions into consideration by making use of five dimensions: tangibility, reliability, assurance, responsiveness, and empathy. SERVQUAL has been also adapted by many researchers to better suit their sector under study. Babakus and Mangold (1992) were the ones to adapt said model to be applied in the health sector. So, the following hypothesis can be structured as follows:

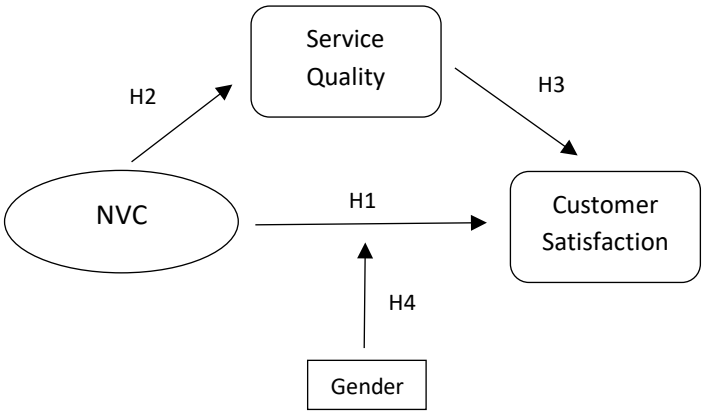
Hypothesis 3. *Service quality is positively related to customer satisfaction.*

Another feature needed to be considered when dealing with clinical interactions is the effect gender has on the possible outcomes. Researchers have found differences in the way doctors' nonverbal cues generate patient satisfaction that were attributed to gender (Mast, 2007). What is more, female doctors are believed to help their patients more, care for them and present different medical approach than men and that is what patients usually expect from them (Lurie *et al.*, 1997). Others have found that patient satisfaction levels differed when seeing a male doctor and when a female one (Hall *et. al.*, 1994). So, the final hypothesis can be the following:

Hypothesis 4. *Doctor's gender and nonverbal communication influence patient's perceived service quality and satisfaction.*

On the grounds of the formulation of these 4 different hypotheses, the research model to be tested throughout this study is presented below in Figure 4.

Figure 4. Hypothesized Research Model



3. CHAPTER III: RESEARCH METHODOLOGY

3.1 Introduction

Following the discussion of the relevant literature and the introduction of the conceptual framework and the hypotheses to be tested throughout this research, it is imperative to illustrate the methodology that was employed towards that direction. As Saunders *et al.* (2009) theorized while developing their '*research onion*' approach, in general, research process is divided into philosophies, approaches, strategies, methodological choices, time horizons and further information regarding techniques and procedures (such as data analysis and collection).

This research adopts a **positivism research philosophy**, insofar as that the researcher relies on scientific evidence while keeping a distance from the subject matter to avoid affecting the results in any way. In addition, it follows a **deductive approach** since it presents a conceptual framework that was developed after examining previous viewpoints in the existing literature. The **strategy** that was used to test this conceptual framework was that of an **experiment** designed by the researcher. The data of this research was collected using a **quantitative method** on account of the researcher developing a close-ended questionnaire through which a large sample is gathered, one that can eventually lead to strong, generalized conclusions. Moreover, this study uses a **cross-sectional time horizon** which means that the researcher gathers and examines her data in a short period of time rather than gathering it at many different time frames using the same sample.

3.2 Data collection

Data collection was performed using primary, as well as secondary sources. As far as the latter is concerned, a thorough literature review on the concepts of *Nonverbal Communication*, *Service Quality* and *Customer Satisfaction* was conducted to ensure the proper formulation of the conceptual framework and the appropriate methods and techniques. As per the primary source, 4 separate close-ended questionnaires were used for that purpose, each corresponding to a different scenario.

Each questionnaire presented a different photo stimulus to said participant with a view to studying how different nonverbal behaviors from male and female doctors result in different judgments regarding service quality and satisfaction. All data was collected within a period of 24 days (from 06/11/2019 to 30/11/2019) and the questionnaires were distributed on the areas of Central (city of Volos), Northern (city of Thessaloniki) and Southern (city of Athens) Greece.

The targeted population were working males and females belonging either in the Generation X (born from 1965 to 1979) or Y/Millennials (born from 1980 to 1994) age group.

These 4 different questionnaires reached to a total number of **210 participants** and the response rate was 100%. More specifically, the 4 different research scenarios were depicted in 4 distinct questionnaires. These questionnaires were created with the aid of *Google Forms* and can be found in Appendix A in Greek, which was the language they were distributed in since all participants were Greek. A link (containing all 4 distinct questionnaire links in google forms) was then sent out via e-mail or social media private message to everyone separately. With the help of a certain algorithm, each time a participant clicked on the sent link a random scenario out of the existing four would appear before them. In this way, the researcher had no influence on who completed which scenario. Finally, all questionnaires were returned to the researcher fully completed, since each question was marked as required when filling in each google form.

3.3 Research measures

Demographics

The first section of all questionnaires consists of a few demographics' inquiries concerning **gender**, **age** and **level of education**. Furthermore, two additional questions regarding their **frequency of doctor visits** and whether participants' have a **chronic health problem** are also included at this point.

Nonverbal Communication

To begin with, using scenarios is a common research method while studying nonverbal behavior. Videotaped ones have been extensively used in the past (Burgoon *et al.*, 1990; Gabbott and Hogg, 2000), even recorded messages (Mehrabian and Wiener, 1967) at the dawn of its research interest. However, in this research the method of **photograph scenarios** was used, following the example of Lau (1982) who chose 2 average looking subjects (male – female) to study the effects of smiling on attributing positive or negative characteristics. The scenario of this study was written by the researcher to include 1 male and 1 female doctor, sitting behind their desk at the office. The reason why the concept of the doctor scenario was chosen is because many studies in the past have exhibited considerable interest in doctor–patient relationships, focusing on how doctors could interpret patients' nonverbal communication to treat them better. Nonetheless, not many exist that view how doctors' nonverbal behavior may affect patients' perceptions. To that end, two equally attractive and

around the same age subjects were chosen, so that the attractiveness and age factor would not play an important role when making judgements about them. Additionally, they were both given the same white coat and the photographs were taken at the same physical surroundings to make sure that these two factors would also not weigh in. Subsequently, the subjects were instructed to pose according to the researcher's guidelines, taking 2 different poses each. On the **positive scenario (Positive Nonverbal Behavior)**, they would lean forward keeping a close interpersonal distance, having eye contact and smiling. On the **negative scenario (Negative Nonverbal Behavior)**, they would sit back at a further distance, not presenting any eye contact and not smiling. After taking multiple stills, 4 were chosen to be used in this research.

Therefore, the research scenario for each of the 4 questionnaires was fabricated as follows:

1st Scenario: Male Subject, Positive NVB (Eye contact, Smiling, Forward lean)

2nd Scenario: Male Subject, Negative NVB (No eye contact, Nonsmiling face, Backward Lean)

3rd Scenario: Female Subject, Positive NVB (Eye contact, Smiling, Forward Lean)

4th Scenario: Female Subject, Negative NVB (No eye contact, Nonsmiling face, Backward Lean)

Service Quality

Service quality was measured using the widely used **SERVQUAL** 22-item scale that was introduced based on the research conducted by Zeithaml, V. A., Berry, L. L. and Parasuraman, A. (1996) that measures perceived service quality based on both Expectations (11 items) and Perceptions (11 items). Perceived service quality is calculated as the difference between the perception and expectation scores (P – E). That score measures the service gap of the degree to which expectations exceed perceptions. The more positive that scores, the higher the level of service quality. However, in this study the adapted 30-item one by Babakus and Mangold (1992) was preferred. That scale uses a 5-point Likert response type (instead of the original 7-point one) for each set of questions, with the anchors "strongly agree=5" and "strongly disagree=1", on which higher numbers indicate higher level of expectations or perceptions. This adapted version of the SERVQUAL instrument has been modified to better suit the health sector and furthermore, the use of a 5-point scale is believed to reduce frustration when answering the questionnaire, delivering a higher response rate.

One thing that was different in this research, though, was the elimination of the set of the 2 first questions regarding equipment and facilities, since there is no information about them presented in the scenarios. The set of questions that were eliminated were the following:

1) Hospitals should have up-to-date equipment.

16) XYZ has up-to-date equipment.

2) Hospitals' physical facilities should be visually appealing.

17) XYZ's physical facilities are visually appealing.

Another set of questions was also excluded from the final questionnaire regarding employee support from management, since doctors are self-employed. That set of questions that was excluded was:

13) Hospital employees should get adequate support from their employers to do their jobs well.

28) Employees get adequate support from XYZ to do their jobs well.

Thus, we finally came up with a total of ***24 questions*** instead of the original 30 (12 on expectations – 12 on perceptions). The first question in the questionnaire seeks to measure the *tangibility* aspect of the service in question, *reliability* is measured throughout questions 2 to 4. Moving on, the *responsiveness* dimension is measured from questions 5 to 7, while *assurance* is measured in 8, 9 and 10. The *empathy* dimension is present in the final statements, questions 11 and 12. Finally, it should be noted that the respondents were first presented with the 12*''Expectations''* questions in the questionnaire, then they were shown the respective photograph scenario of the doctor and finally they were asked to answer questions regarding perceptions of service quality based on the photograph they had just seen.

Customer Satisfaction

Finally, as far as customer satisfaction is concerned, ***3 questions*** were used following in the steps of Caruana et al. (2000) who chose the single-item measure of Taylor and Baker (1994) for Questions 1 and 2, as well as the multi-item scale for satisfaction used by Oliver (1980) for Question 3.

1) If I had to choose all over again, I would not feel differently about choosing XYZ

2) I think we did the right thing when we decided to use XYZ

3) I believe that purchasing services from XYZ is usually a satisfying experience

That scale also uses a 5-point Likert response type for each question, with the anchors "strongly agree=5" and "strongly disagree=1".

4. CHAPTER IV: RESULTS AND DATA ANALYSIS

The analysis of the gathered data in this research was conducted using the SPSS 25 software package (Statistical Package for Social Sciences). SPSS is a useful instrument while attempting to identify correlations between various research variables (Writeneed, 2017) and eventually be able to present them effective through multiple graphs (Nie, Bent and Hull, 1975). The preliminary step for data analysis is descriptive (frequencies, means, standard deviations), followed by the main analysis which pertains to inferential statistics to check the Hypotheses of the present study.

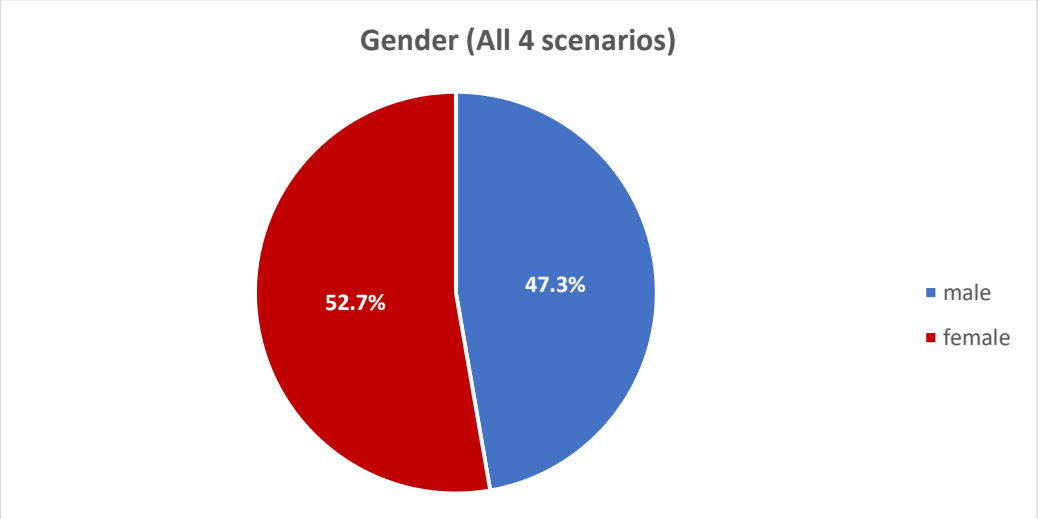
4.1. Descriptive Statistics

As mentioned before, the 4 different questionnaires were distributed to a total number of 210. However, after checking the research's inclusion – exclusion criteria, 9 responses were classified as not meeting the age criterion (the respondents belonged to the 56+ age group) and thus they were not included in the statistical analysis. After that, the total sample is updated to **201 participants**. Below follow the descriptive statistics of the total sample, as well as for each of the 4 different nonverbal behavior photo scenarios.

Gender

The respondents' gender response is nearly equally distributed throughout all 4 questionnaires **(n=201)**, since the majority are female with a percentage of **52.7%**, while males represent the remaining **47.3%** (Figure 5).

Figure 5. Participants' gender distribution (Accumulative sample, n=201)



Participants of the 1st scenario which includes a *male doctor exhibiting positive nonverbal behavior (eye contact, smiling, forward lean)*, amount to a total of **n=51**. Out of these 51 participants, **56.9%** are female and **43,1%** are male (Figure 6). Participants of the 2nd scenario which includes a *male doctor exhibiting negative nonverbal behavior (no eye contact, nonsmiling face, backward lean)*, amount to a total of **n=50**. As shown in Figure 7, out of these 50 participants, half are female (**50%**) and the other half are male (**50%**).

Figure 6. Gender (Male doctor, positive NVC)

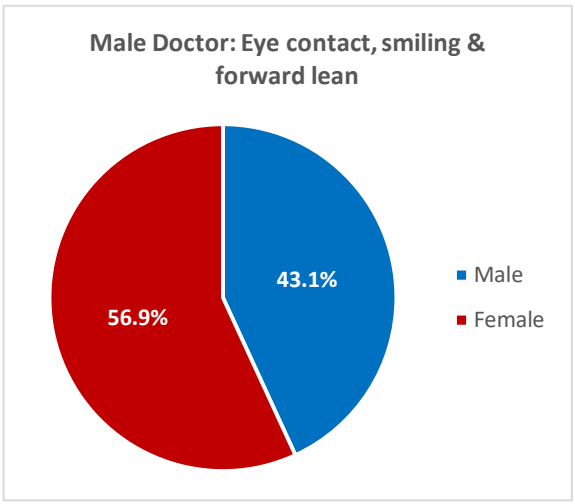
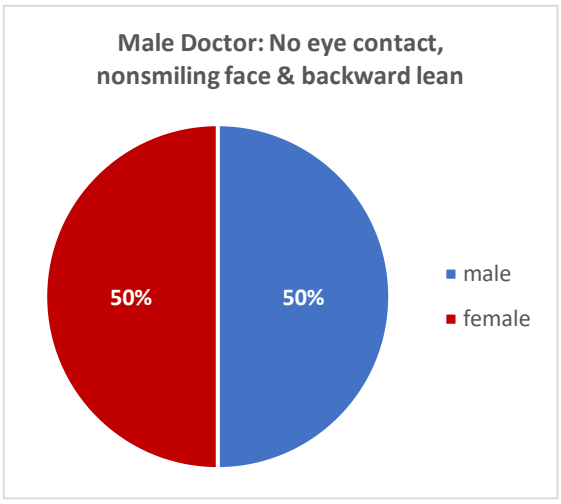


Figure 7. Gender (Male doctor, negative NVC)



Participants of the 3rd scenario which includes a *female doctor maintaining eye contact, smiling and leaning forward* amount to a total of **n=51**. As shown in Figure 8, out of these 51 participants, **51%** are male and the remaining **49%** are female. Participants of the 4th scenario which portrays a *female doctor having no eye contact, not smiling and leaning backwards* are **n=49**. Out of these 49 participants, **55.1%** are female and **44.9%** are male (Figure 9).

Figure 8. Gender (Female doctor, positive NVC)

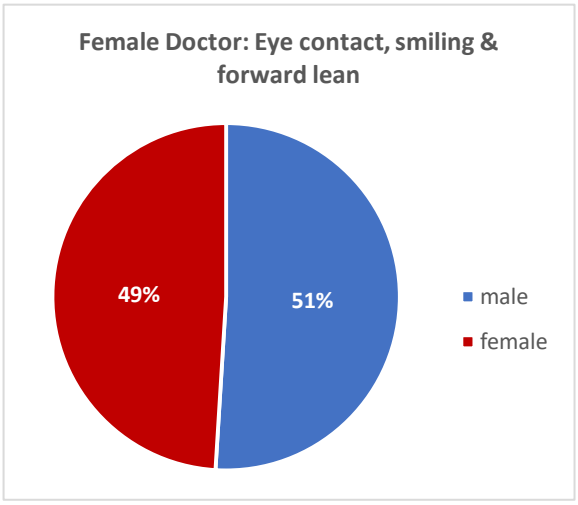
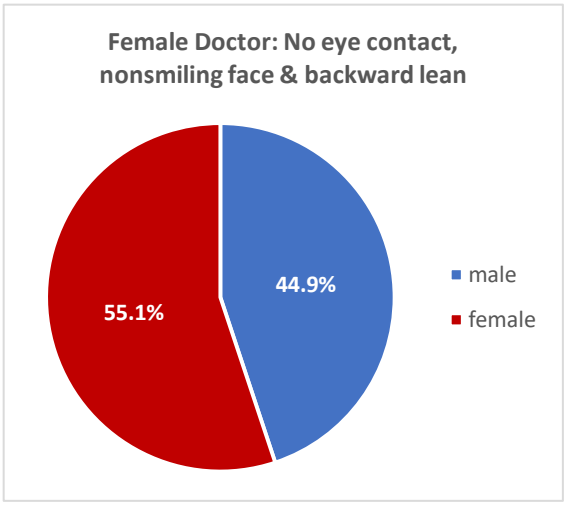


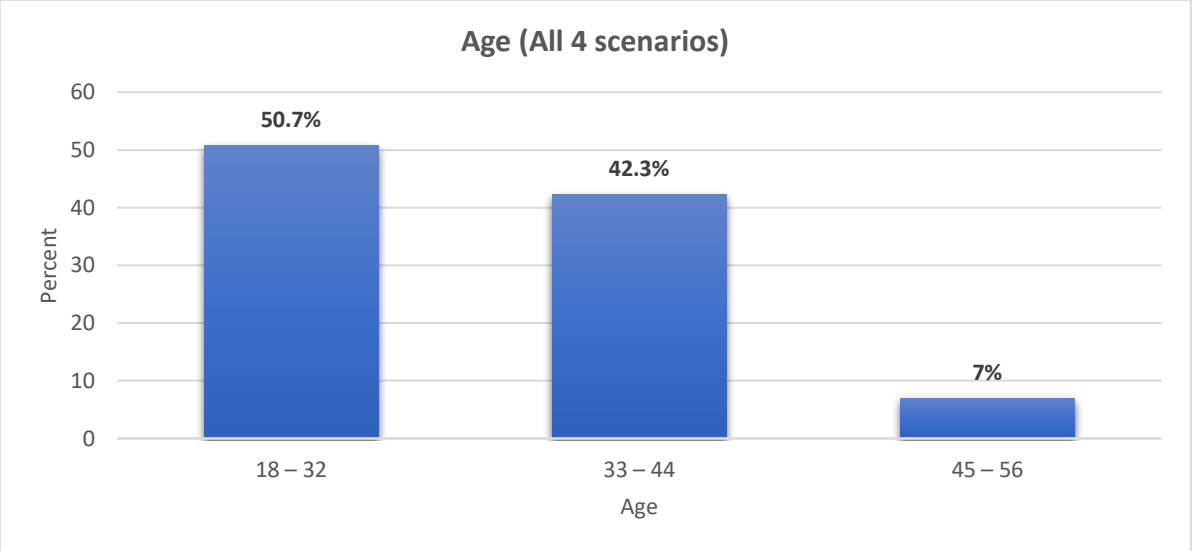
Figure 9. Gender (Female doctor, negative NVC)



Age

As far as the participants' age group is concerned, as shown in Figure 10, **50.7%** range from 18 to 32 years old. Close to that percentage is the age group from 33 to 44 years old which makes up for the **42.3%** of the total sample. Finally, participants from 45 to 56 years old inhabit just the **7%** of the total research sample (n=201).

Figure 10. Participants' age group (Accumulative sample, n=201)



In the scenario where the *male doctor is sending out positive nonverbal cues* (n=51), **39.2%** range from 18 to 32 years old. The majority range from 33 to 44 years old which corresponds to **56.9%** and those from 45 to 56 years old embody the **3.9%** (Figure 11). In the *negative nonverbal scenario* (n=50), **48%** are from 18 to 32 years old and **42%** from 33 to 44, while **10%** of the participants are from 45 to 56 years old (Figure 12).

Figure 11. Age group (Male doctor, positive NVB)

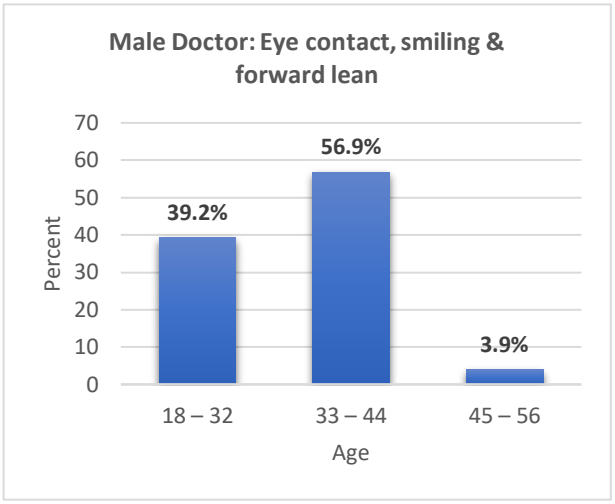
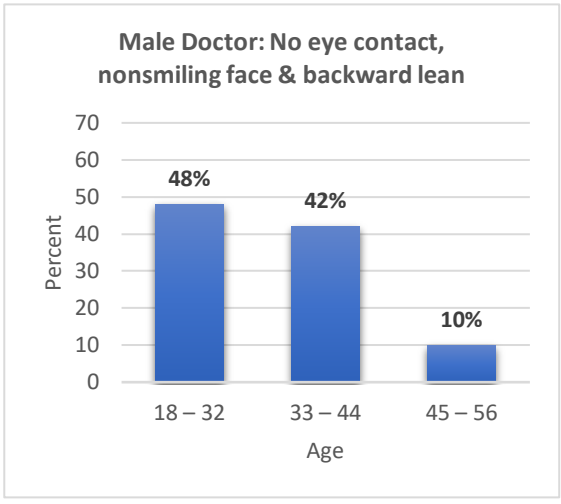


Figure 12. Age group (Male doctor, negative NVB)



In the scenario where the *female doctor is exhibiting positive nonverbal behavior* (n=51), as shown in Figure 13, **56.9%** range from 18 to 32 years old and **37.3%** from 33 to 44 years old, while those from 45 to 56 years old embody the **5.9%** of the participants. As far as the participants' age group in the *negative nonverbal behavior scenario* (n=49) is concerned, **59.2%** range from 18 to 32 years old and the **32.7%** corresponds to the age group from 33 to 44 years old. Finally, those from 45 to 56 years old are the **8.2%** of the participants (Figure 14).

Figure 13. Age group (Female doctor, positive NVB)

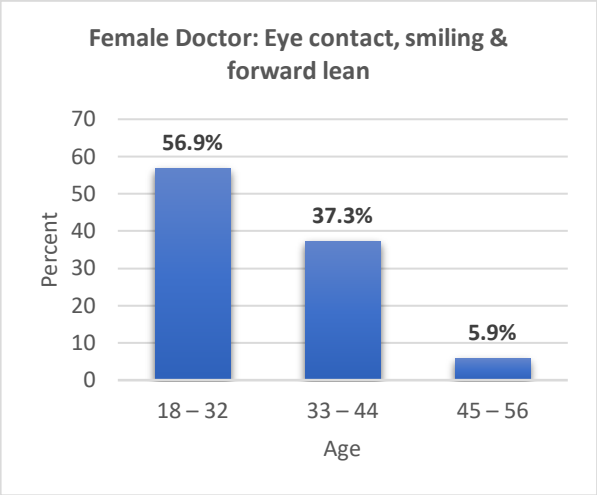
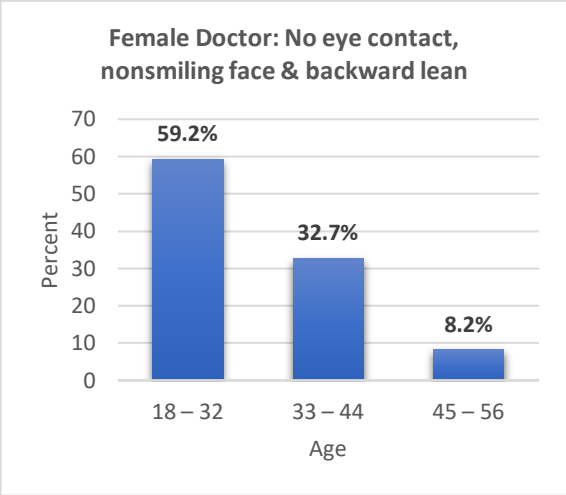


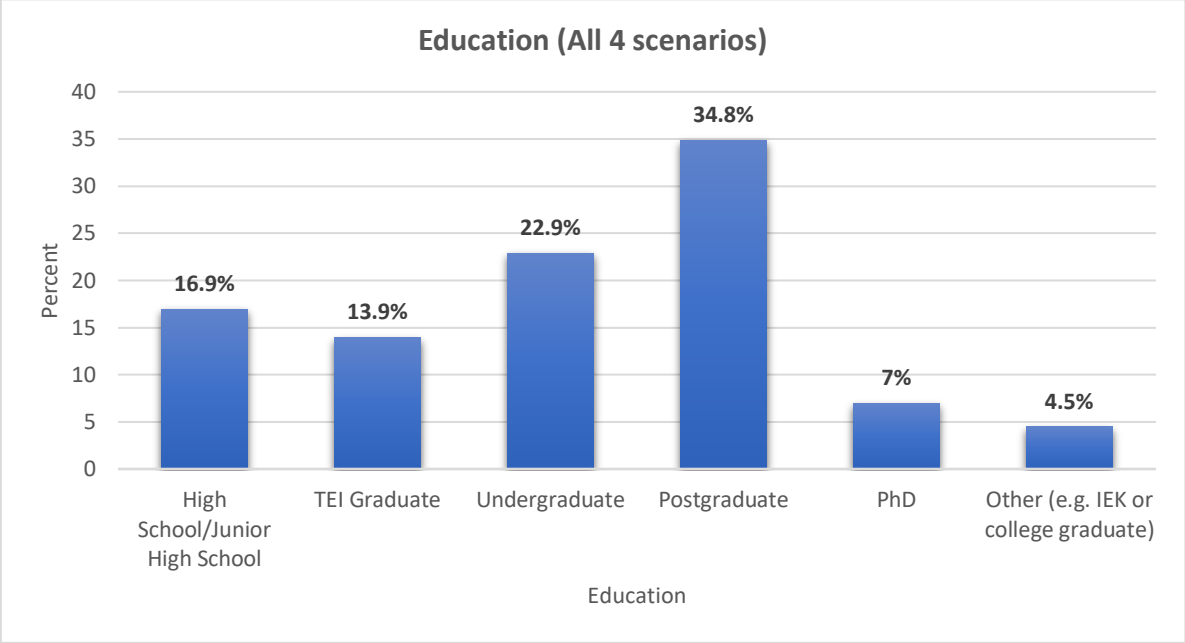
Figure 14. Age group (Female doctor, negative NVB)



Level of Education

As shown in Figure 15, the accumulative sample's (n=201) level of education is rather high since most of the respondents have a higher education degree. More specifically, **13.9%** have graduated from technical undergraduate programs in Greece (T.E.I.), while **22.9%** have graduated from various Greek University undergraduate programs (A.E.I.). The highest percentage corresponds to those in procession of a Master's degree, which is as high as **34.8%**. **7%** of the respondents are even in the possession of a PhD. The remaining percentage is distributed among High School or Junior High School graduates (**16.9%**) and those who have graduated from other foreign or domestic private colleges (**4.5%**).

Figure 15. Participants' level of education (Accumulative sample, n=201)



In the sample where a *male doctor exhibiting positive nonverbal behavior* was portrayed (n=51), most of the respondents (**33.3%**) have graduated from various Greek University undergraduate programs (A.E.I.), followed by a percentage of **27.5%** that belongs to those in procession of a Master's degree. **19.6%** are High School or Junior High School graduates, while **11.8%** have graduated from technical undergraduate programs in Greece (T.E.I.). Finally, only **2%** of the respondents hold a PhD and those who have graduated from other foreign or domestic private colleges correspond to a percentage of **5.9%** (Figure 11). Most of the participants that were presented with the 2nd scenario portraying a *male doctor exhibiting negative nonverbal behavior* (n=50), are in procession of a Master's degree (**46%**) and **22%** have graduated from A.E.I., while **12%** have graduated from T.E.I. and **10%** hold a PhD. Finally, **8%** are High School or Junior High School graduates, while **2%** have graduated from other foreign or domestic private colleges (Figure 17).

Figure 16. Education (Male doctor, positive NVB)

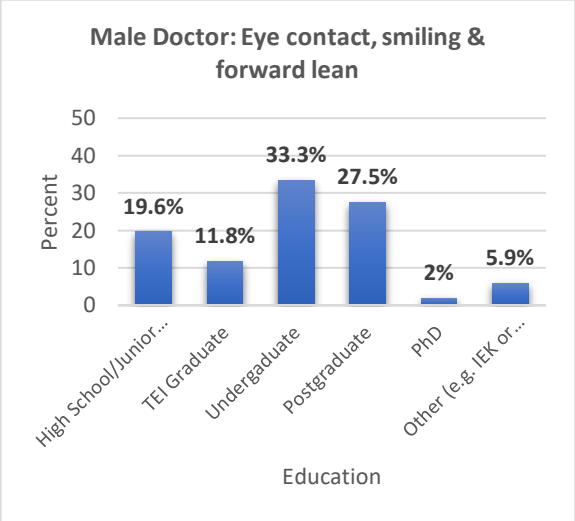
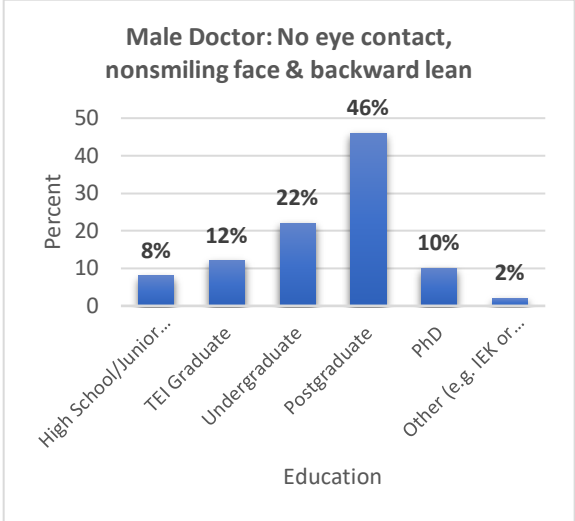


Figure 17. Education (Male doctor, negative NVB)



As for the scenario portraying a *female doctor with positive nonverbal behavior* (n=51), most of the respondents (**31.4%**) are in procession of a Master's degree and the **19.6%** are High School or Junior High School graduates. **17.6%** have graduated from various Greek University undergraduate programs (A.E.I.) and another **17.6%** have graduated from technical undergraduate programs in Greece (T.E.I), while **9.8%** of the respondents hold a PhD and **3.9%** have graduated from other foreign or domestic private colleges (Figure 18). In the final scenario including a *female doctor exhibiting negative nonverbal behavior* (n=49), **34.7%** are in procession of a Master's degree and the **20.4%** are High School or Junior High School graduates. **18.4%** have graduated from A.E.I. and another **14.3%** have graduated from T.E.I., **6.1%** of the respondents hold a PhD and another **6.1%** have graduated from other foreign or domestic private colleges (Figure 19).

Figure 18. Education (Female doctor, positive NVB)

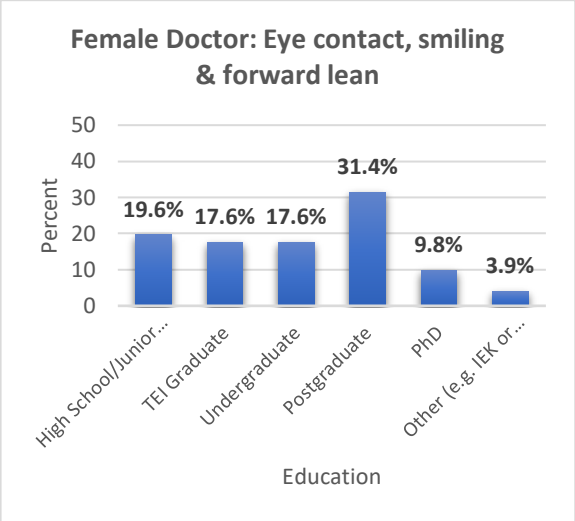
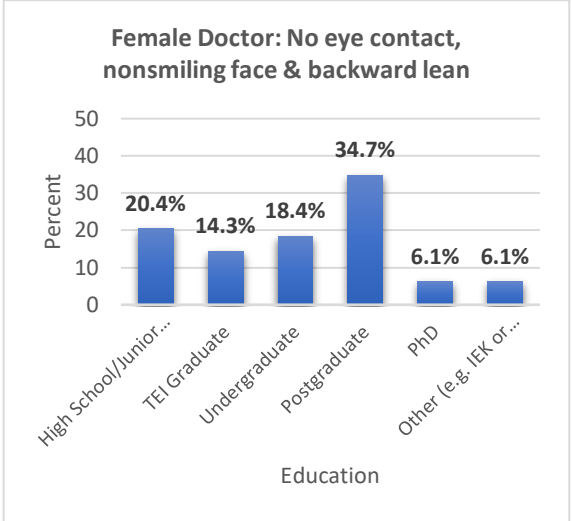


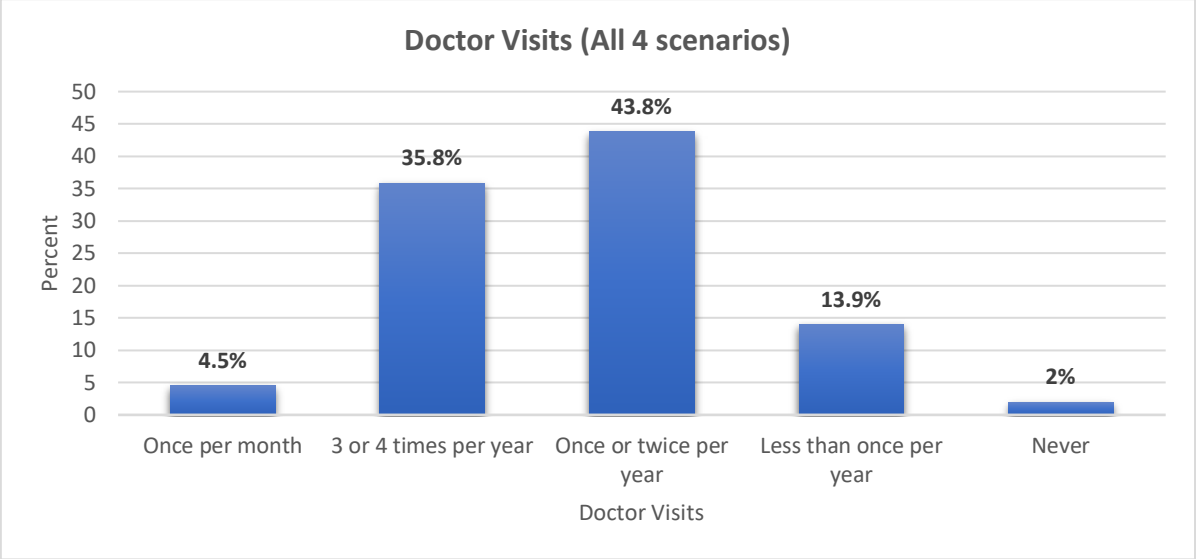
Figure 19. Education (Female doctor, negative NVB)



Frequency of Doctor Visits

When asked about how often they visit a doctor regardless of specialty throughout the year, most of the participants throughout the total 4 scenarios (n=201) responded that they do so once or twice per year (**43.8%**). Following that percentage, the **35.8%** stated that they do so 3 or 4 times per year, while the **13.9%** records that these visits happen less than once per year. **4.5%** of the participants claim that their visits to any kind of doctors take place once per month, while the small percentage of **2%** affirms that they never even go to the doctor (Figure 20).

Figure 20. Participants' frequency of doctor visits (Accumulative sample, n=201)



In the *male doctor – positive nonverbal behavior* scenario (n=51), **41.2%** responded that they do so 3 or 4 times per year and **33.3%** stated that their frequency of doctor visits is up to once or twice per year. **13.7%** records that these visits happen less than once per year, while **9.8%** claim that their visits to any kind of doctors take place once per month and **2%** affirm that they never go to the doctor (Figure). When the participants that were presented with the *male doctor – negative nonverbal behavior* scenario (n=50) were asked about the number of times they visit a certain doctor of any specialty throughout the year, **40%** of them responded that they do so 3 or 4 times per year and another **40%** stated that they go once or twice per year. Following that percentages, **16%** claimed that they visit a doctor less than once in a year, while **the 4%** of the participants mention that their visits to any kind of doctors take place once per month (Figure 22).

Figure 21. Doctor visits (Male doctor, positive NVB)

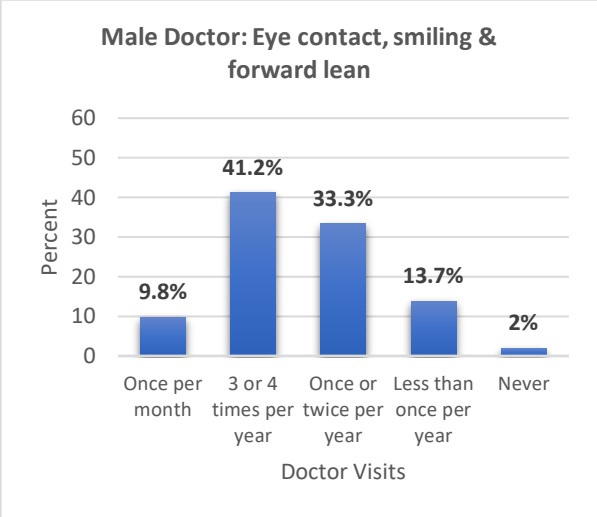
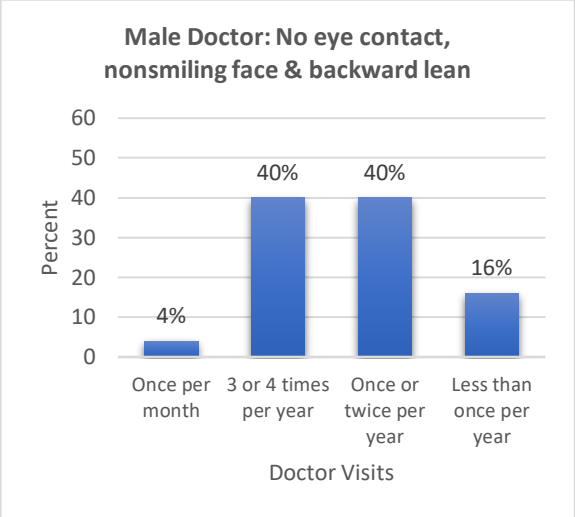


Figure 22. Doctor visits (Male doctor, negative NVB)



In the *female doctor – positive nonverbal behavior* scenario (n=51), **52.9%** of the participants responded that they do so once or twice a year, **31.4%** claimed that they frequent doctors 3 or 4 times per year and **11.8%** less than once per year. A small **2%** stated that their visits are as often as once per month, while another **2%** denied ever going to the doctor (Figure 23). Ultimately, in the *female doctor – negative nonverbal behavior* scenario (n=49) **49%** of the participants responded that they visit a doctor of any specialty once or twice throughout the year, while **30.6%** claimed that they frequent doctors 3 or 4 times per year and **14.3%** less than once per year. Following that, a small percentage of **2%** stated that their visits are as often as once per month, while the **4.1%** denied going to the doctor (Figure 24).

Figure 23. Doctor visits (Female doctor, positive NVB)

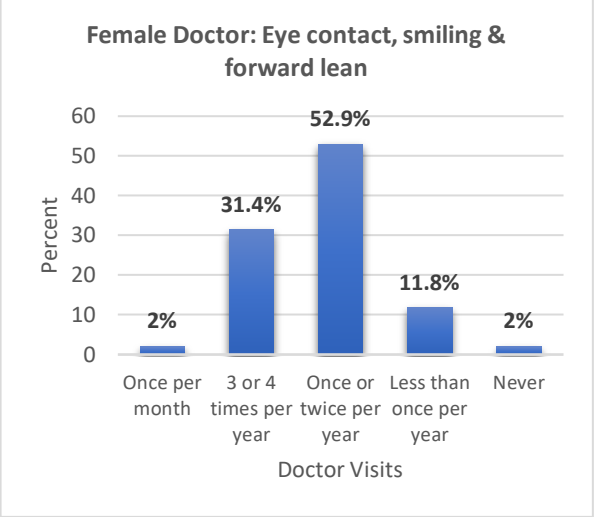
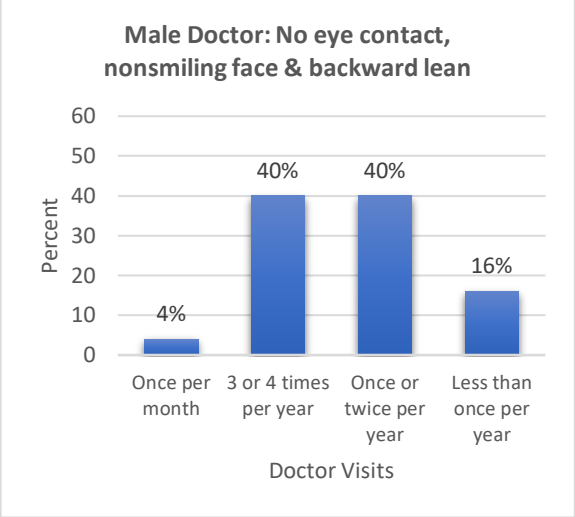


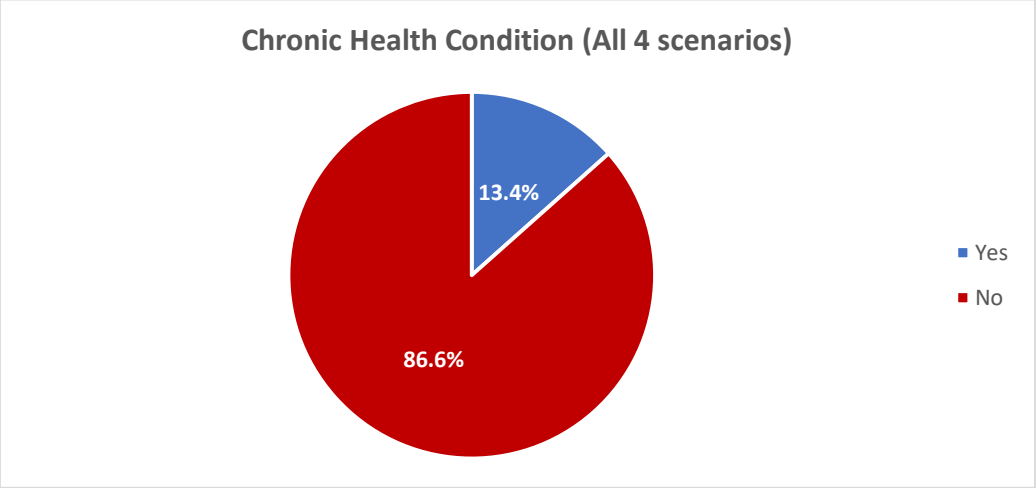
Figure 24. Doctor visits (Female doctor, negative NVB)



Chronic Health Condition

When inquired about their health condition and whether they suffer from a chronic health problem, most of the participants throughout the 4 different research scenarios (n=201) responded negatively (**86.6%**), while the **13.4%** of them presented a positive response to that question (Figure 25).

Figure 25. Existence of a chronic health condition (Accumulative sample, n=201)



In the 1st scenario portraying a *male doctor with positive nonverbal behavior* (n=51) when inquired about the existence of a chronic health condition most of the participants (**86.3%**) responded negatively, while the **13.7%** of them presented a positive response to that question (Figure 26). In the 2nd scenario portraying a *male doctor with negative nonverbal behavior* (n=50), most of the participants (**86.3%**) responded negatively, while the **13.7%** of them presented a positive response (Figure 27).

Figure 26. Chronic condition (Male doctor, positive NVB)

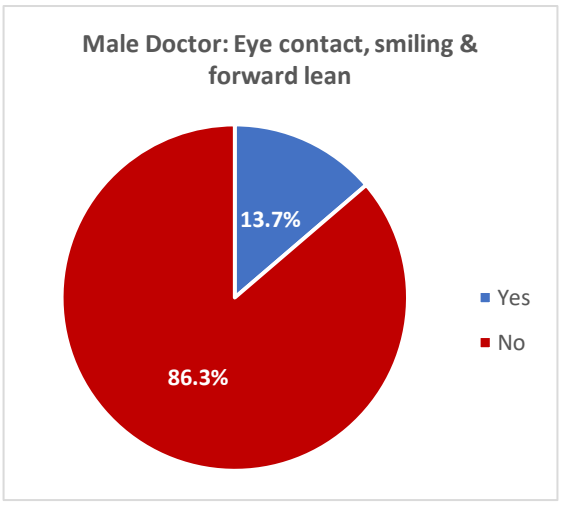
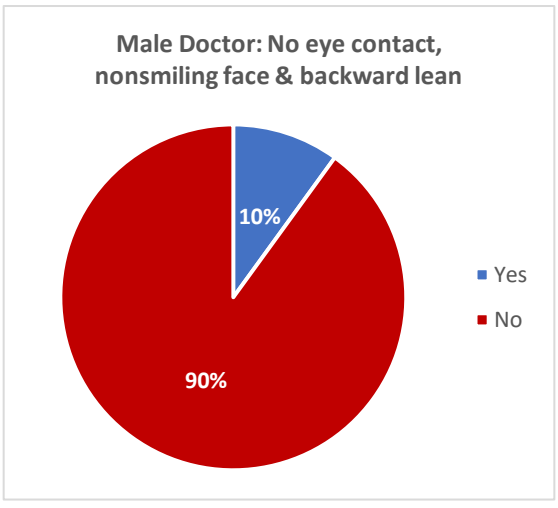


Figure 27. Chronic condition (Male doctor, negative NVB)



In the 3rd scenario portraying a *female doctor with positive nonverbal behavior* (n=51) when inquired about their health condition and whether they suffer from a chronic health problem, most of the participants (**84.3%**) responded negatively, while the remaining **15.7%** presented a positive response to that question (Figure 28). Finally, in the 4th scenario portraying a *female doctor with negative nonverbal behavior* (n=49) when inquired about the existence of a chronic health condition, most of the participants (**85.7%**) responded negatively, while the remaining **14.3%** provided a positive response (Figure 29).

Figure 28. Chronic condition (Female doctor, positive NVB)

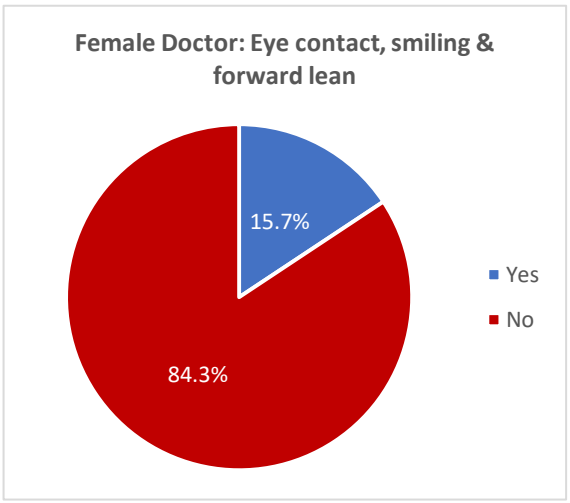
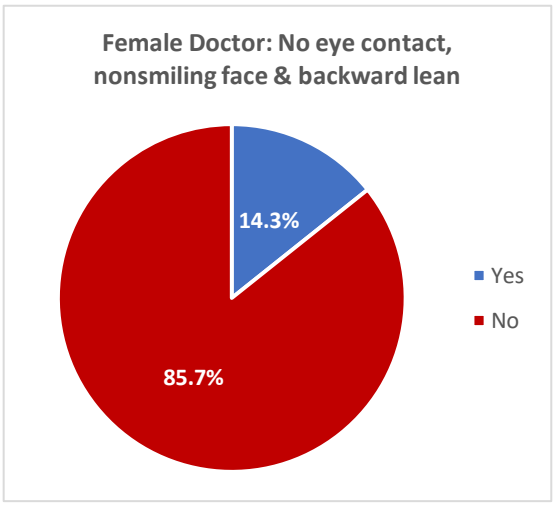


Figure 29. Chronic condition (Female doctor, negative NVB)



4.2 Reliability (Cronbach's alpha)

The different concepts to be examined in this study are: ***Service Quality*** (that results from the gap that derives from a set of questions on the 5 dimensions of Service ***Expectations*** and Service ***Perceptions***) and ***Customer Satisfaction***. At this point, each set of questions was measured by running Cronbach's alpha test in order to check the items' internal consistency and their reliability. For the variables to be considered reliable, their reliability coefficient value must be above 0,7 and below 1 (Santos, 1999). As shown in Table 1, none of the questions under all scales were eliminated since in all cases Cronbach's alpha is above 0,7. More detailed specifics about each item's Cronbach's alpha can be found on Appendix B.

Table 1. Cronbach's alpha reliability coefficient

Scale	***Cronbach's Alpha***	***N of Questions***
Customer Satisfaction	0.806	3
Service Quality (Expectations)	0.702	12
Service Quality (Perceptions)	0.947	12
Total Items on Service Quality	**0.893**	**24**

4.3 Means and Standard Deviation

Under the first column of Table 2, we may find the means of the participants' (n=209) responses for each of the concepts that are studied.

More specifically, for service quality items, both expectations and perceptions mean scores are presented for each of the 5 dimensions (tangibles, reliability, responsiveness, assurance and empathy), followed by the overall perceived service quality scores that derive from the gap between perceptions and expectations. Service quality gap scores in previous research can be within a range of -5 to +5. In this research, they are found to range from a score of -3.35 to +0.50. That means that expectations scores were higher than perception ones and thus **service quality** is presented with a **negative gap score** in all 4 research scenarios. According to Parasuraman, Zeithmal and Berry (1988) this is not strange since customers' expectations usually exceed their perceptions of the service quality meaning that there is always need for further improvement.

As for the **customer satisfaction** questions, a **rather neutrality** is observed since the mean of the responses is gathered around ‘‘neither agree, nor disagree’’ and ‘‘partially agree’’.

The last column of the Table contains the standard deviations (σ) of the variables. The lower the standard deviation values, the more concentrated around the average the values of the variable are. As observed in the table below, the standard deviations for the key variables are relatively small (<1,2). This suggests that the averages significantly reflect the responses of the whole sample with small deviations.

Table 2. Means and Standard Deviations (Accumulative sample, n=201)

Scale	***Means***			***Standard Deviation***
SQ Dimensions	***Expectations***	***Perceptions***	***Gap Score***	
Tangibles	4.50	4.01	-0.48	1.12
Reliability	4.57	3.56	-1.01	0.88
Responsiveness	4.08	3.53	-0.54	0.92
Assurance	4.84	3.59	-1.24	0.89
Empathy	4.26	3.43	-0.82	1.04
Service Quality			-0.82	0.73
Customer Satisfaction			3.49	0.81

Following that analysis, in Table 3 there can be found the means and standard deviations for each research scenario. For the ***1st scenario*** where there is a male doctor exhibiting positive nonverbal behavior (eye contact, smiling, forward lean), the mean for all service quality dimensions presents a **negative score**, resulting in a **service quality** mean score of -0.49. As far as **customer satisfaction** is concerned, a **rather neutrality** is observed since the mean of the responses is gathered around ‘‘neither agree, nor disagree’’ and ‘‘partially agree’’.

On the second column of the Table, the standard deviations for the key variables appear to be relatively small (<1,2). This suggests that the averages significantly reflect the responses of the whole sample with small deviations.

Table 3. Male Doctor: Eye Contact, Smiling & Forward Lean – Means and Standard Deviations

Scale	***Mean***			***Standard Deviation***
SQ Dimensions	***Expectations***	***Perceptions***	***Gap Score***	
Tangibles	4.60	4.31	-0.29	1.04
Reliability	4.64	3.98	-0.66	0.73
Responsiveness	4.19	3.96	-0.23	0.86
Assurance	4.86	4.09	-0.77	0.67
Empathy	4.29	3.80	-0.49	0.98
Service Quality			-0.49	0.56
Customer Satisfaction			3.92	0.76

For the **2nd scenario** presenting a male doctor exhibiting negative nonverbal behavior (no eye contact, nonsmiling face, backward lean), the mean for all service quality dimensions also presents a **negative score**, resulting in a **service quality** mean score of -1.02 which is greater than the 1st scenario (Table 4). More specifically, the gap score is greater for the assurance dimension (-1.47), while tangibles (-0.78) and responsiveness (-0.74) are presented with the highest scores among the 5 dimensions. As far as **customer satisfaction** is concerned, an **obvious neutrality** is observed since the mean of the responses is gathered around ‘‘neither agree, nor disagree’’ and ‘‘partially agree’’.

On the second column of the Table, the standard deviations for the key variables appear to be relatively small (<1,2). This suggests that the averages significantly reflect the responses of the whole sample with small deviations.

Table 4. Male Doctor: No Eye Contact, Nonsmiling Face & Backward Lean – Means and Standard Deviations

Scale	***Mean***			***Standard Deviation***
SQ Dimensions	***Expectations***	***Perceptions***	***Gap Score***	
Tangibles	4.42	3.64	-0.78	1.14
Reliability	4.51	3.46	-1.04	0.81
Responsiveness	4.05	3.31	-0.74	0.81
Assurance	4.84	3.36	-1.47	0.78
Empathy	4.37	3.31	-1.06	0.98
Service Quality			-1.02	0.69
Customer Satisfaction			3.27	0.67

For the **3rd scenario,** where there is a female doctor exhibiting positive nonverbal behavior (eye contact, smiling, forward lean), the mean for all service quality dimensions yet again presents a **negative score**, resulting in a **service quality** mean score of -0.46 (Table 5). As far as **customer satisfaction** is concerned, a **somewhat neutrality** is observed since the mean of the responses is gathered around ‘‘neither agree, nor disagree’’ and ‘‘partially agree’’.

On the second column of the Table, the standard deviations for the key variables appear to be relatively small (<1,2). This suggests that the averages significantly reflect the responses of the whole sample with small deviations.

Table 5. Female Doctor: Eye Contact, Smiling & Forward Lean – Means and Standard Deviations

Scale	***Mean***			***Standard Deviation***
SQ Dimensions	***Expectations***	***Perceptions***	***Gap Score***	
Tangibles	4.39	4.37	-0.01	1.04
Reliability	4.55	3.81	-0.73	0.66
Responsiveness	4.07	3.83	-0.24	0.86
Assurance	4.80	3.98	-0.82	0.70
Empathy	4.21	3.70	-0.50	0.94
Service Quality			-0.46	0.58
Customer Satisfaction			3.77	0.70

Ultimately, for the **4th scenario,** where a female doctor is exhibiting negative nonverbal behavior (no eye contact, nonsmiling face, backward lean), the mean for all service quality dimensions presents a **negative score** as well, resulting in a **service quality** mean score of -1.33 which is the greatest among all 4 scenarios (Table 6). In particular, the gap score is greater for the assurance dimension (-1.93) followed by that of reliability (-1.63), while tangibles (-0.85) are presented with the highest scores among the 5 dimensions. As far as **customer satisfaction** is concerned, a **somewhat neutrality** is observed since the mean of the responses is gathered around ‘‘neither agree, nor disagree’’ and ‘‘partially agree’’.

On the second column of the Table, the standard deviations for the key variables appear to be relatively small (<1,2). This suggests that the averages significantly reflect the responses of the whole sample with small deviations.

Table 6. Female Doctor: No Eye Contact, Nonsmiling Face & Backward Lean – Means and Standard Deviations

Scale	***Mean***			***Standard Deviation***
SQ Dimensions	***Expectations***	***Perceptions***	***Gap Score***	
Tangibles	4.59	3.73	-0.85	1.08
Reliability	4.58	2.95	-1.63	0.96
Responsiveness	4.00	3.02	-0.97	0.96
Assurance	4.85	2.92	-1.93	0.86
Empathy	4.17	2.90	-1.26	1.07
Service Quality			-1.33	0.73
Customer Satisfaction			2.99	0.75

4.4 Inferential Statistics

4.4.1 Correlations (Pearson)

At this point during the data analysis, there will be an examination of the linear relationships that exist between the variables for the accumulative sample of n=209. As a measure of the linear relationship between two variables, Pearson's correlation coefficient (the bivariate correlation) is used. This indicator (r) receives values from -1 to +1. These two edges denote the optimal, negative or positive linear correlation in each case, while value 0 indicates no linear correlation. The correlations with the two stars (**) show a level of statistical significance of 1%, while one star (*) indicates 5% (Table 7).

Table 7. Pearson's correlation between demographics and variables

Pearson's Correlation n=209	**(I)**	**(II)**	**(III)**	**(IV)**	**(V)**	**(VI)**	**(VII)**	**(VIII)**
Doctor's NVC (I)	**1**							
Gender (II)	-0.00	**1**						
Age (III)	0.00	-0.02	**1**					
Education (IV)	0.10	0.04	-0.01	**1**				
Doctor Visits (V)	-0.05	-0.12	-0.03	-0.17*	**1**			
Chronic Health Condition (VI)	-0.04	-0.05	-0.04	0.01	0.27**	**1**		
Service Quality (VII)	0.45**	0.04	-0.19**	0.00	-0.09	0.07	**1**	
Customer Satisfaction (VIII)	0.43**	0.06	-0.05	-0.15*	-0.03	0.00	0.65**	**1**

According to the above correlation table (Table 7), the following results can be discussed:

Demographics about **gender** do not present any statistical significance at all in this research.

Age has a low negative correlation with the variable of *service quality* ($r = 0.19$, $p < 0.01$), meaning that higher age levels are related with lower assessments of service quality, albeit not to a great degree.

Education presents a low negative correlation with *customer satisfaction* ($r = 0.15$, $p < 0.01$), which means that if there are higher levels of education customer satisfaction will be lower. It also has a low negative correlation with *doctor visits* ($r = 0.17$, $p < 0.05$), meaning that higher levels of education relate with fewer numbers of doctor visits.

Doctor visits present a positive correlation with the existence or not of the participants' *chronic health condition* ($r = 0.27$, $p < 0.01$) albeit a weak one. That is, if the variable of their chronic health condition rises, their visits to the doctor rise as well and hence become more frequent.

Service quality has a rather medium positive correlation with *doctor's nonverbal communication* ($r = 0.45$, $p < 0.01$). What is important, though, is the fact that it presents a strong positive correlation with *customer satisfaction* ($r = 0.65$, $p < 0.01$). That means that if perceived service quality rises, customer satisfaction levels will also rise with it.

Ultimately, **customer satisfaction** has a rather medium positive correlation with *doctor's nonverbal communication* ($r = 0.43$, $p < 0.01$).

4.4.2 Linear Regressions

After examining the correlations between the different variables, our research model will be tested through linear regressions using the method *stepwise*. The final goal is to determine the relationship between the dependent variable of nonverbal communication and the independent variable of customer satisfaction, with the mediating role of service quality.

Regression analysis examines the relationships between the variables focusing on those between a dependent and one or more independent variables. Fundamentally, the regression analysis indicates how the value of the dependent variable will change when the value of the independent variable changes. The dependent variable is denoted by Y while the independent by X and these two variables are connected by a linear equation in the form of $\mathbf{Y = \alpha + \beta X}$, where α is the constant (i.e. the value of Y, for X = 0) and β is the linear equation's curve.

H1: Nonverbal communication is positively related to customer satisfaction.

Table 8. Model Summary (H1)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.435[a]	.189	.185	.73349

a. Predictors: (Constant), Nonverbal Communication

Table 8 presents the model summary with the indicators of good fit. The coefficient $R^2 = 0.18$ indicates the predictability of the model and the coefficient R = 0.43 indicates the absolute value of the linear correlation coefficient, showing that there is a high positive affinity between the two variables. What is more, the Adjusted R Square column shows that about 18% of the variance of the variable of Nonverbal Communication can be explained by the independent variable of Customer Satisfaction.

Table 9. ANOVA (H1)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.964	1	24.964	46.402	.000[b]
	Residual	107.062	199	.538		
	Total	132.027	200			

a. Dependent Variable: Customer Satisfaction

b. Predictors: (Constant), Nonverbal Communication

The above table (Table 9), shows the simple regression model and reveals the statistical significance of the regression equation. F = 46.40 for a significance level of 95%, thus the model is statistically significant.

Table 10. Coefficients (H1)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.143	.073		42.855	.000
	Nonverbal Communication	.705	.103	.435	6.812	.000

a. Dependent Variable: Customer Satisfaction

Table 10 presents the values of the regression equation coefficients with the dependent variable of Customer Satisfaction (Y) and the independent variable of Nonverbal Communication (X). The Beta column shows the correlation coefficients of the predictor with the dependent variable.

So, according to the above table the equation forms as follows:

Customer Satisfaction = 3.14 + 0.70 * Nonverbal Communication

That is, if the predictor of Nonverbal Communication is altered by 1, then Customer Satisfaction will change by 0.70 of that unit. To sum up, **H1 Hypothesis** is **confirmed** as there is a positive relationship between the two variables.

H2: Nonverbal communication is positively related to service quality.

Table 11. Model Summary (H2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.459[a]	.211	.207	.65880

a. Predictors: (Constant), Nonverbal Communication

Table 11 presents the model summary with the indicators of good fit. The coefficient $R^2 = 0.21$ indicates the predictability of the model and the coefficient R = 0.45 indicates the absolute value of the linear correlation coefficient, showing that there is a high positive affinity between the two variables. What is more, the Adjusted R Square column shows that about 20% of the

variance of the variable of Nonverbal Communication can be explained by the independent variable of Service Quality.

Table 12. ANOVA (H2)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.054	1	23.054	53.119	.000[b]
	Residual	86.369	199	.434		
	Total	109.423	200			

a. Dependent Variable: Service Quality

b. Predictors: (Constant), Nonverbal Communication

The above table (Table 12), shows the simple regression model and reveals the statistical significance of the regression equation. F = 53.11 for a significance level of 95%, thus the model is statistically significant.

Table 13. Coefficients (H2)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.162	.066		-17.643	.000
	Nonverbal Communication	.677	.093	.459	7.288	.000

a. Dependent Variable: Service Quality

Table 13 presents the values of the regression equation coefficients with the dependent variable of Service Quality (Y) and the independent variable of Nonverbal Communication (X). The Beta column shows the correlation coefficients of the predictor with the dependent variable.

So, according to the above table the equation forms as follows:

Service Quality = -1.16 + 0.67 * Nonverbal Communication

That is, if the predictor of Nonverbal Communication is altered by 1, then Service Quality will change by 0.67 of that unit. To sum up, **H2 Hypothesis** is **confirmed** as there is a positive relationship between the two variables.

H3: Service quality is positively related to customer satisfaction.

Table 14. Model Summary[b] (H3)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.659[a]	.435	.432	.61247

a. Predictors: (Constant), Service Quality

b. Dependent Variable: Customer Satisfaction

Table 14 presents the model summary with the indicators of good fit. The coefficient $R^2 = 0.43$ indicates the predictability of the model and the coefficient R = 0.65 indicates the absolute value of the linear correlation coefficient, showing that there is a high positive affinity between the two variables. What is more, the Adjusted R Square column shows that about 43% of the variance of the variable Service Quality can be explained by the independent variable of customer satisfaction.

Table 15. ANOVA (H3)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.377	1	57.377	152.955	.000[b]
	Residual	74.649	199	.375		
	Total	132.027	200			

a. Dependent Variable: Customer Satisfaction

b. Predictors: (Constant), Service Quality

The above table (Table 15), shows the simple regression model and reveals the statistical significance of the regression equation. F = 152.95 for a significance level of 95%, thus the model is statistically significant.

Table 16. Coefficients (H3)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.093	.065		63.284	.000
	Service Quality	.724	.059	.659	12.368	.000

a. Dependent Variable: Customer Satisfaction

Table 16 presents the values of the regression equation coefficients with the dependent variable of Customer Satisfaction (Y) and the independent variable of Service Quality (X). The Beta column shows the correlation coefficients of the predictor with the dependent variable.

So, according to the above table the equation forms as follows:

Customer Satisfaction = 4.09 + 0.72 * Service Quality

That is, if the predictor of Service Quality is altered by 1, then Customer Satisfaction will change by 0.72 of that unit. To sum up, **H3 Hypothesis** is **confirmed** as there is a positive relationship between the two variables.

4.4.3 Two-way Multivariate Analysis of Variance (Two-way MANOVA)

Following the multiple linear regression analysis that were performed to test the previous Hypotheses, a two-way multivariate linear model (MANOVA). MANOVA will explore the relationship between the variables and test whether service quality and customer satisfaction (continuous dependent variables) differ by doctor's nonverbal communication and their gender (discrete independent variables). In order to proceed with it, normality and homogeneity assumptions of the sample must be met.

H4: Doctor's gender and nonverbal communication influence patient's perceived service quality and satisfaction.

Table 17. Box's Test of Equality of Covariance Matrices

Box's M	9.004
F	.982
df1	9
df2	444222.806
Sig.	.452

a. Design: Intercept + NVC + Gender + NVC * Gender

As it is shown in Table 17, **p = 0.45 > 0.05** and thus the equality condition is satisfied since the observed covariance matrices of the dependent variables are equal across groups. Moving on with the homogeneity assumption, Levene's Test will show us whether the error variance of the dependent variables is equal across groups. As presented in the following table (Table 18), that condition is also satisfied for all variables since **all p > 0.05**.

Table 18. Levene's Test of Equality of Error Variances

		Levene Statistic	df1	df2	Sig.
Service Quality	Based on Mean	1.353	3	197	.259
	Based on Median	1.257	3	197	.290
	Based on Median and with adjusted df	1.257	3	180.725	.291
	Based on trimmed mean	1.371	3	197	.253
Customer Satisfaction	Based on Mean	.790	3	197	.501
	Based on Median	.690	3	197	.559
	Based on Median and with adjusted df	.690	3	187.544	.559
	Based on trimmed mean	.740	3	197	.529

a. Design: Intercept + NVC + Gender + NVC * Gender

In Table 19, the multivariate tests are presented (MANOVA) and since none of the assumptions are violated, Wilk's Lambda will be interpreted. There is a significant difference between positive and negative nonverbal communication when considered together on the variables of service quality and customer satisfaction: **Wilks Λ = 0.75**, **F(2,196) = 32.04**, **p = 0.00** and **partial η^2 = 0.25**. As far as the doctor's gender is concerned, there is not any statistical significance observed since **Wilks Λ = 0.98**, **F(2,196) = 2.16**, **p = 0.12** and **partial η^2 = 0.02** and the same is also true for the combined case of nonverbal communication and doctor's gender together, where it is observed that **Wilks Λ = 0.99**, **F(2,196) = 1.42**, **p = 0.24** and **partial η^2 = 0.01**.

Table 19. Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.979	4645.442[b]	2.000	196.000	.000	.979
	Wilks' Lambda	.021	4645.442[b]	2.000	196.000	.000	.979
	Hotelling's Trace	47.402	4645.442[b]	2.000	196.000	.000	.979
	Roy's Largest Root	47.402	4645,442[b]	2.000	196.000	.000	.979
NVC	Pillai's Trace	.246	32.037[b]	2.000	196.000	.000	.246
	Wilks' Lambda	.754	32.037[b]	2.000	196.000	.000	.246
	Hotelling's Trace	.327	32.037[b]	2.000	196.000	.000	.246
	Roy's Largest Root	.327	32.037[b]	2.000	196.000	.000	.246
Gender	Pillai's Trace	.022	2.157[b]	2.000	196.000	.118	.022
	Wilks' Lambda	.978	2.157[b]	2.000	196.000	.118	.022

	Hotelling's Trace	.022	2.157[b]	2.000	196.000	.118	.022
	Roy's Largest Root	.022	2.157[b]	2.000	196.000	.118	.022
NVC * Gender	Pillai's Trace	.014	1.422[b]	2.000	196.000	.244	.014
	Wilks' Lambda	.986	1.422[b]	2.000	196.000	.244	.014
	Hotelling's Trace	.015	1.422[b]	2.000	196.000	.244	.014
	Roy's Largest Root	.015	1.422[b]	2.000	196.000	.244	.014

a. Design: Intercept + NVC + Doc_Gender + NVC * Doc_Gender

b. Exact statistic

At this point, a separate ANOVA was conducted for all dependent variables with each evaluated at an alpha level of 0.05 and the results can be found in Table 20. From what it is observed here, there is a significant difference between doctor's positive and negative nonverbal communication on service quality, where **F(1,197) = 53.9**, **p = 0.00** and **partial η^2 = 0.22**, with positive nonverbal behavior **(M = -0.49)** scoring higher than negative nonverbal behavior **(M = -1.16)**[3]. Moreover, there is also a statistical difference between doctor's positive and negative nonverbal communication on customer satisfaction, where **F(1,197) = 46.9**, **p = 0.00** and **partial η^2 = 0.19** with positive nonverbal behavior **(M = 3.8)** scoring higher than negative nonverbal behavior **(M = 3.14)**.

Moving forward with the results, there is not any statistical significance between doctor's gender and service quality since **F(1,197) = 2.16**, **p = 0.14** and **partial η^2 = 0.01**, but the same is not observed for customer satisfaction. At this test, there is a statistical significance for gender and customer satisfaction, where **F(1,197) = 4.20**, **p = 0.04** and **partial η^2 = 0.02**.

Finally, when doctor's nonverbal communication and gender are both examined at the same time, it is obvious that there is not any statistical significance observed on service quality since **F(1,197) = 2.58**, **p = 0.11** and **partial η^2 = 0.01** and the same is appears to be true for its relationship with customer satisfaction as well, where we have **F(1,197) = 0.23**, **p = 0.63** and **partial η^2 = 0.00**.

[3] For more detailed information on Estimated Marginal Means, see Appendix C.

Table 20. Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Service Quality	25.075[a]	3	8.358	19.521	.000	.229
	Customer Satisfaction	27.312[b]	3	9.104	17.128	.000	.207
Intercept	Service Quality	13.341	1	136.341	318.430	.000	.618
	Customer Satisfaction	2455.545	1	2455.545	4619.645	.000	.959
NVC	Service Quality	23.057	1	23.057	53.852	.000	.215
	Customer Satisfaction	24.907	1	24.907	46.857	.000	.192
Gender	Service Quality	.926	1	.926	2.162	.143	.011
	Customer Satisfaction	2.231	1	2.231	4.197	.042	.021
NVC * Gender	Service Quality	1.104	1	1.104	2.579	.110	.013
	Customer Satisfaction	.122	1	.122	.230	.632	.001
Error	Service Quality	84.349	197	.428			
	Customer Satisfaction	104.714	197	.532			
Total	Service Quality	245.227	201				
	Customer Satisfaction	2590.778	201				
Corrected Total	Service Quality	109.423	200				
	Customer Satisfaction	132.027	200				

a. R Squared = .229 (Adjusted R Squared = .217)

b. R Squared = .207 (Adjusted R Squared = .195)

As it is shown in Table 20, gender does not present a statistically significant result in relation to service quality [**F(1,197) = 2.16**, **p = 0.14**], but it does so in regard to customer satisfaction [**F(1,197) = 4.20**, **p = 0.04**]. Furthermore, when different types of nonverbal communication are calculated (positive – negative) along with gender, where there is not any statistical significance on service quality [**F(1,197) = 2.58**, **p = 0.11**] or customer satisfaction [**F(1,197) = 0.23**, **p = 0.63**]. As a result, **H4 Hypothesis** cannot be fully confirmed and thus, it is **partially confirmed** since doctor's nonverbal communication does influence both service quality and customer satisfaction but gender only affects customer satisfaction.

5. CHAPTER V: DISCUSSION

The purpose of the present research was to examine the role of doctors' nonverbal communication (kinesics in particular) in service quality and customer satisfaction by testing different experimental scenarios. Two different photographed scenarios including positive (eye contact, smiling, forward lean) and negative (no eye contact, nonsmiling face, backward lean) behavior were developed for one male and one female doctor, so that we could also test the role of gender in this relationship.

Initially, after analysing the descriptive statistics of the total sample (n=201) and each scenario separately, reliability of the variables data was tested for all concepts included in the research experiment. Cronbach's alpha was found to be greater than 0.70 indicating that the individual questions used in the questionnaires to measure the variables were relevant and reliable. Means and standard deviations of customer satisfaction and service quality were also presented in the different 4 experimental scenarios, calculating each dimension of the SERVQUAL model separately and in total as well.

Then, the correlation of the variables was tested where statistically significant positive correlations were found between all variables to be hypothesized but gender. More specifically, the positive correlation between service quality and customer satisfaction was strong at 0.65.

Following that, multiple linear regressions were conducted to check the relationship between the variables in dyads and the first three Hypotheses were confirmed. Doctor's nonverbal communication is in fact positively related to customer satisfaction and service quality as well. Service quality is also positively related to customer satisfaction. Finally, a two-way Multivariate Analysis of Variance (MANOVA) was performed to investigate the relationship among the independent (doctor's nonverbal communication, doctor's gender) and dependent (service quality, customer satisfaction) variables. At this point the final hypothesis was partially confirmed because gender failed to present any statistical significance for service quality ($p = 0.14$), but it did so for customer satisfaction ($p = 0.04$).

5.1 Theoretical implications

Sundaram and Webster (2000) have found that nonverbal cues of smiling, leaning forward in an open posture and maintaining eye contact are considered to emit a sense of friendliness and other positive feelings. Our findings also supported these outcomes since there was a clear positive relation between NVC and service quality and also customer satisfaction. More specifically, positive NVC lead to higher assessments when compared to negative NVC. That

confirmed findings in existing literature that when doctors are smiling, maintain eye contact and hold a forward lean posture, recorded patient satisfaction is higher (Griffith *et al.*, 2003; Hall, 1995). Unlike previous studies (Hall *et. al.*, 1994; Mast, 2007), though, patients' assessments did not present any statistical significance when the gender factor weighed in for service quality but it did so for customer satisfaction.

Moreover, SERVQUAL results recorded mostly negative gap scores, which means that perceptions failed to meet expectations on quality of service. Perspective patients expected to get more from doctors that what they actually perceived. That was to be expected as most existing research (Cronin *et al.*, 1992; Parasuraman, Zeithmal and Berry, 1988) highlights that it is common for customers to have more expectations than what they eventually assess that they got. That leaves us with the notion that there is a paramount need for improvement. Customer satisfaction, however, was not that low but it was average.

Nonetheless, what is significant is the fact that even though both negative nonverbal communication scenarios had clearly lower satisfaction marginal mean scores (male: 3.27, female: 2.99) than the positive ones (male: 3.92, female: 3.77), there was a distinct difference between male and female doctor. While the marginal mean for a male doctor exhibiting no eye contact, not smiling and leaning backwards was 3.27 for patient satisfaction, when it came to a female doctor, the recorded marginal mean was 2.99.

As we can see, individuals tend to make disparate judgments for male and female doctors when it comes to customer satisfaction in cases where negative and closed nonverbal communication is present. That stresses the existing gender bias that derives from societal norms and expectations. In the manner of Goldberg's (1968) conception, gender bias can be defined as a stereotype (a prejudicial action based on a distorted perception) about females and it can be observed across multiple situations, disciplines and work sectors. Especially in the medical profession, many individuals discriminate female from male doctors by placing no trust in them and seek for a supplementary opinion from a male doctor. What is more, recorded patient satisfaction for female physicians is indisputably lower than for male physicians (Roter and Hall, 2014).

5.2 Practical Implications

Blanch-Hartigan *et al.* (2018) suggest that collecting as much information possible regarding the interpretation of nonverbal cues in clinical interactions is vital for doctors to be educated to

provide the best healthcare services possible. The effects of doctors' nonverbal cues during clinical interactions still have a long way to go and more research needs to shed light on the subject so that doctors can better deliver their services and treat their patients leaving them satisfied. As Mast (2007) has suggested, physicians need to incorporate nonverbal behavior in their training and apart from looking out for their patients' nonverbal cues, they have to become acquainted with how to control their own so as to increase patients' perceptions of service quality and satisfaction. Being knowledgeable of the patients' positive assessments brought by open nonverbal communication (such as eye contact, smiling, forward lean), they can seek to adapt those more. For example, they can try to maintain eye contact when interacting with a patient, smile more and lean forward to show that they care to meet their needs.

Obviously, though, there is not a one-size-fits-all winning strategy and doctors should also take other factors into consideration, like patients' severe health problem or even the nonverbal cues that they are sending out before adapting that open nonverbal behavior for all of them. Just imagine a doctor smiling widely while you are a second away from bursting into tears because you have just found out that you have a rather serious health situation. Not the best painted picture, right?

The bottom line is that there is an imperative need for physicians to improve their nonverbal communication cues if they want to provide better service quality and reach patient satisfaction. As it is apparent, though, female physicians need to strive more to benefit from patient satisfaction than male ones. Even when they know they have just the right thing to say, they should always look out for those implicit nonverbal signs that they may inadvertently be sending out. Besides, those are the ones that can speak volumes, without even speaking.

5.3 Limitations and suggestions for future research

As it can be observed in various other studies, this one also has a few limitations that need to be addressed. To begin with, choice of both the subjects and experimental scenarios used in the questionnaire was made by the author's personal choice and judgment, after a thorough review of the existing literature on nonverbal communication, trying to choose equally attractive subjects to avoid physical attractiveness moderating the results. Maybe if the two subjects were tested though a questionnaire beforehand, though, in regard to their attractiveness, that bias would be completely neutralized.

Furthermore, other aspects that might moderate the relationship between nonverbal communication and service quality – and by extension customer satisfaction as well – may be

researched, such as patients' personality traits (Ellsworth and Ludwig, 1972; Kendon, 1978). Ultimately, the present experimental design used certain kinesics (eye contact, smiling, forward lean) to investigate if nonverbal communication affects service quality and satisfaction assessments. Future research can explore other nonverbal cues such as paralanguage or even physical appearance to determine whether they also affect these assessments.

5.4 Conclusion

The present study attempted to shed light on the role of nonverbal communication in clinical interactions. Patients' perceived service quality and satisfaction were measured in the context of certain doctors' kinesics (eye contact, smiling and leaning as body posture) and their gender. To that end, 4 experimental research scenarios were formulated via photographic representations. The first two depicting a male doctor exhibiting positive and negative nonverbal behavior respectively and the others a female doctor in the same context. Our findings concluded that service quality is positively related to customer satisfaction and doctor's nonverbal cues indeed affect patients' assessments on quality of service and satisfaction. As far as the doctor's gender is concerned, findings concluded that it does indeed affect patient satisfaction.

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APPENDICES

APPENDIX A. Online Questionnaires (Google Forms)

Έρευνα Διπλωματικής Εργασίας

Στο πλαίσιο της συλλογής δεδομένων για την εκπόνηση της διπλωματικής μου έρευνας θα σας παρακαλούσα να αφιερώσετε λίγα λεπτά από το χρόνο σας για τη συμπλήρωση του παρακάτω ερωτηματολογίου.
Οι απαντήσεις σας είναι άκρως εμπιστευτικές και θα χρησιμοποιηθούν αποκλειστικά για την έρευνα στο πλαίσιο της διπλωματικής μου εργασίας. Δεδομένου ότι δεν υπάρχουν σωστές και λάθος απαντήσεις, σας παρακαλώ να είστε ειλικρινείς κατά την συμπλήρωση του ερωτηματολογίου.

Σας ευχαριστώ θερμά εκ των προτέρων για τη συμμετοχή σας!

Δημητρίου Ευδοξία

Email: evddimitriou@uth.gr

Μεταπτυχιακή Φοιτήτρια στο ΔΠΜΣ Νέα Επιχειρηματικότητα, Καινοτομία & Ανάπτυξη

Τμήμα Μηχανικών Χωροταξίας και Περιφερειακής Ανάπτυξης

Τμήμα Οικονομικών Επιστημών

Τμήμα Μηχανολόγων Μηχανικών

Πανεπιστήμιο Θεσσαλίας

* Απαιτείται

Φύλο *

- ○ Άνδρας
- ○ Γυναίκα

Ηλικία *

- ○ 18 – 32
- ○ 33 – 44
- ○ 45 – 56
- ○ 56+

Επίπεδο Εκπαίδευσης *

- ○ Απόφοιτος/η Γυμνασίου/Λυκείου
- ○ Απόφοιτος/η Α.Ε.Ι.
- ○ Απόφοιτος/η Τ.Ε.Ι.
- ○ Κάτοχος Μεταπτυχιακού Τίτλου
- ○ Κάτοχος Διδακτορικού Τίτλου
- ○ Άλλο:

Πόσο συχνά επισκέπτεστε ιατρό ανεξαρτήτως ειδικότητας για οποιαδήποτε συμβουλή; *

- ○ 1 φορά την εβδομάδα
- ○ 1 φορά το μήνα
- ○ 3 ή 4 φορές το χρόνο
- ○ 1 ή 2 φορές το χρόνο
- ○ Λιγότερο από 1 φορά το χρόνο
- ○ Ποτέ

Έχετε κάποιο χρόνιο πρόβλημα υγείας; *

- ○ Ναι
- ○ Όχι

Όταν επισκέπτομαι έναν/μία ιατρό ...

Παρακαλώ επιλέξτε τον αριθμό που αντιστοιχεί στο βαθμό συμφωνίας σας με τις παρακάτω απόψεις.

Ο/Η ιατρός πρέπει να φαίνεται περιποιημένος/η. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Ο/Η ιατρός πρέπει να παρέχει τις υπηρεσίες του/της τη στιγμή που υπόσχεται ότι θα το κάνει. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Όταν οι ασθενείς έχουν προβλήματα, ο/η ιατρός οφείλει να δείχνει κατανόηση και να τους καθησυχάζει. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Ο/Η ιατρός οφείλει να είναι ακριβής στην τιμολόγηση των υπηρεσιών του/της. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Ο/Η ιατρός πρέπει να ενημερώνει τους ασθενείς του/της για την ακριβή στιγμή που θα πραγματοποιηθούν οι υπηρεσίες. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Είναι ρεαλιστικό οι ασθενείς να αναμένουν την άμεση εξυπηρέτησή τους από τον/την ιατρό. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Ο/Η ιατρός πρέπει να είναι πάντα διατεθειμένος/η να βοηθήσει τους ασθενείς. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Οι ασθενείς θα πρέπει να μπορούν να αισθάνονται ασφαλείς κατά την αλληλεπίδρασή τους με τον/την ιατρό. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Ο/Η ιατρός πρέπει να είναι ενημερωμένος/η. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Ο/Η ιατρός πρέπει να είναι ευγενικός/ή. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Θα πρέπει να αναμένεται ότι ο/η ιατρός θα προσέξει ιδιαίτερα κάθε ασθενή. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Είναι ρεαλιστικό να πιστεύουμε ότι ο/η ιατρός εργάζεται με γνώμονα τα συμφέροντα των ασθενών του/της. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Επίσκεψη στον ιατρό.

Για τις ανάγκες της παρούσας έρευνας φανταστείτε ότι έχετε επιλέξει να επισκεφτείτε έναν ιατρό. Όταν έρχεται η σειρά σας εισέρχεστε στο χώρο εξέτασης και τον βλέπετε μπροστά σας, καθισμένο πίσω από το γραφείο του.
Έπειτα θα κληθείτε να απαντήσετε σε ερωτήσεις σχετικά με το τι πιστεύετε γι' αυτόν εκ πρώτης όψεως.

1st Scenario (Male Doctor – Eye Contact, Smiling, Forward Lean)

Παρατηρήστε την παρακάτω εικόνα του ιατρού για λίγα λεπτά.

2nd Scenario (Male Doctor – No Eye Contact, Nonsmiling Face, Backward Lean)

Παρατηρήστε την παρακάτω εικόνα του ιατρού για λίγα λεπτά.

3rd Scenario (Female Doctor – Eye Contact, Smiling, Forward Lean)

Παρατηρήστε την παρακάτω εικόνα της ιατρού για λίγα λεπτά.

4th Scenario (Female Doctor – No Eye Contact, Nonsmiling Face, Backward Lean)

Παρατηρήστε την παρακάτω εικόνα της ιατρού για λίγα λεπτά.

Πιστεύω ότι ο εικονιζόμενος ιατρός ...

Παρακαλώ επιλέξτε τον αριθμό που αντιστοιχεί στο βαθμό συμφωνίας σας με τις παρακάτω απόψεις.

Φαίνεται περιποιημένος. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Παρέχει τις υπηρεσίες του τη στιγμή που υπόσχεται ότι θα το κάνει. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Όταν οι ασθενείς έχουν προβλήματα, δείχνει κατανόηση και τους καθησυχάζει. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Είναι ακριβής στην τιμολόγηση των υπηρεσιών του. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Ενημερώνει τους ασθενείς του για την ακριβή στιγμή που θα πραγματοποιηθούν οι υπηρεσίες. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Οι ασθενείς εξυπηρετούνται άμεσα από τον ιατρό. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Είναι πάντα διατεθειμένος να βοηθήσει τους ασθενείς. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Οι ασθενείς αισθάνονται ασφαλείς κατά την αλληλεπίδρασή τους με τον ιατρό. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Είναι ενημερωμένος. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Είναι ευγενικός. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Προσέχει ιδιαίτερα κάθε ασθενή. *

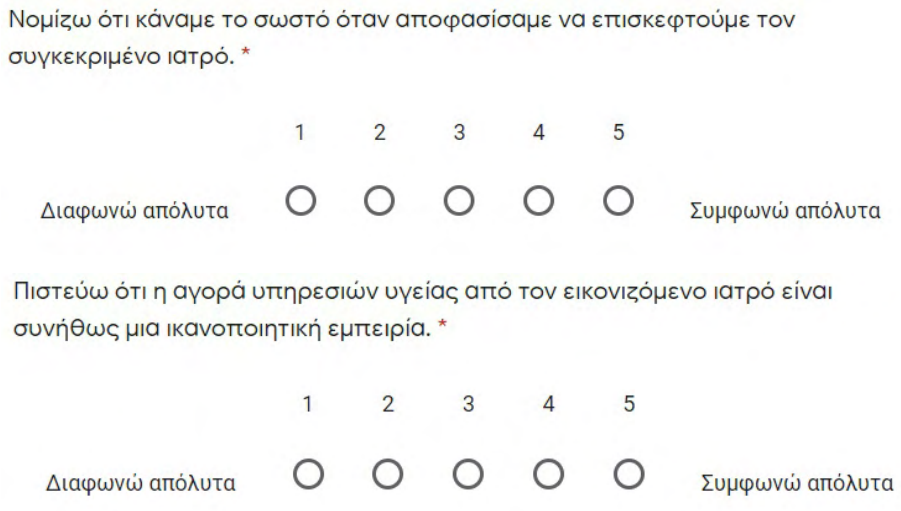
	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Εργάζεται με γνώμονα τα συμφέροντα των ασθενών του. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα

Αν έπρεπε να επιλέξω ξανά, δε θα αισθανόμουν διαφορετικά για την επιλογή του συγκεκριμένου ιατρού. *

	1	2	3	4	5	
Διαφωνώ απόλυτα	○	○	○	○	○	Συμφωνώ απόλυτα



APPENDIX B. Variable Reliability Tables (Cronbach's alpha)

Table 21. Case Processing Summary on Cronbach's Alpha

Case Processing Summary

		N	%
Cases	Valid	201	100.0
	Excluded[a]	0	.0
	Total	201	100.0

a. Listwise deletion based on all variables in the procedure.

Table 22. Cronbach's Alpha on Service Quality (Expectations – Perceptions)

Reliability Statistics

Service Quality	Cronbach's Alpha	N of Items
Service Quality (Expectations)	.702	12
Service Quality (Perceptions)	.947	12
Total	.893	24

Table 23. Cronbach's Alpha on Service Quality (Expectations) – Total Items

Item-Total Statistics

Service Quality (Expectations)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Doctors should appear neat.	49.0249	17.034	.312	.687
Doctors should provide their services at the time they promise to do so.	48.8358	17.018	.393	.678
When patients have problems, doctors should be sympathetic and reassuring.	49.1791	16.298	.323	.686
Doctors should be accurate in their billing.	48.8458	16.941	.406	.677
Doctors should tell patients exactly when services will be performed.	48.9403	16.606	.421	.673
It is realistic for patients to expect prompt service from doctors.	49.9552	14.233	.466	.661
Doctors should always be willing to help patients.	49.4378	14.907	.428	.668
Patients should be able to feel safe in their interactions with doctors.	48.6766	18.450	.203	.699
Doctors should be knowledgeable.	48.5970	18.572	.277	.697
Doctors should be polite.	48.7811	17.712	.309	.689
Doctors should be expected to give patients personal attention.	48.8607	16.900	.403	.676
It is realistic to expect doctors to have their patients' best interests at heart.	49.6667	15.213	.291	.704

Table 24. Cronbach's Alpha on Service Quality (Perceptions) – Total Items

Item-Total Statistics

Service Quality (Perceptions)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The doctor in the photo appears neat.	39.0995	75.550	.521	.949
The doctor in the photo provides his/her services at the time he/she promises to do so.	39.5622	72.757	.732	.943
When patients have problems, said doctor is sympathetic and reassuring.	39.5224	69.291	.803	.941
The doctor in the photo is accurate in his/her billing.	39.5920	71.763	.733	.943
The doctor in the photo tells patients exactly when services will be performed.	39.5821	71.124	.777	.942
Patients receive prompt service from the doctor in the photo.	39.6318	71.234	.764	.942
The doctor in the photo is always willing to help patients.	39.5274	68.940	.835	.940
Patients feel safe in their interactions with the doctor in the photo.	39.5970	68.632	.824	.940
The doctor in the photo is knowledgeable.	39.5224	71.531	.768	.942
The doctor in the photo is polite.	39.3134	69.616	.764	.942
The doctor in the photo gives patients personal attention.	39.6517	70.328	.777	.942
The doctor in the photo has patients' best interests at heart.	39.7114	71.686	.713	.944

Table 25. Cronbach's Alpha on Customer Satisfaction

Reliability Statistics

Customer Satisfaction	Cronbach's Alpha	N of Items
Customer Satisfaction	.806	3

Table 26. Cronbach's Alpha on Customer Satisfaction – Total Items

Item-Total Statistics

Customer Satisfaction	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
If I had to choose all over again, I would not feel differently about choosing the doctor in the photo.	6.8507	3.208	.516	.872
I think we did the right thing when we decided to use the doctor in the photo.	7.0995	2.550	.770	.604
I believe that purchasing services from the doctor in the photo is usually a satisfying experience.	7.0348	2.934	.691	.697

APPENDIX C. Estimated Marginal Means (Two-way MANOVA)

Table 27. Estimated marginal means – Two-way MANOVA (Doctor's Gender)

1. Doctor's Gender

Dependent Variable	Doctor's Gender	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Service Quality	Male	-.756	.065	-.884	-.627
	Female	-.891	.065	-1.021	-.762
Customer Satisfaction	Male	3.601	.073	3.458	3.744
	Female	3.390	.073	3.246	3.534

Table 28. Estimated marginal means – Two-way MANOVA (Nonverbal Communication)

2. Nonverbal Communication

Dependent Variable	Nonverbal Communication	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Service Quality	Negative (No eye contact, Nonsmiling face & Backward lean)	-1.162	.065	-1.291	-1.033
	Positive (Eye contact, Smiling & Forward Lean)	-.485	.065	-.613	-.357
Customer Satisfaction	Negative (No eye contact, Nonsmiling face & Backward lean)	3.143	.073	3.000	3.287
	Positive (Eye contact, Smiling & Forward Lean)	3.847	.073	3.704	3.990

*Table 29. Estimated marginal means – Two-way MANOVA (Nonverbal Communication * Doctor's Gender)*

3. Nonverbal Communication * Doctor's Gender

Dependent Variable	Nonverbal Communication	Doctor's Gender	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Service Quality	Negative (No eye contact, Nonsmiling face & Backward lean)	Male	-1.020	.093	-1.203	-.838
		Female	-1.304	.093	-1.487	-1.122
	Positive (Eye contact, Smiling & Forward Lean)	Male	-.491	.092	-.672	-.310
		Female	-.479	.093	-.661	-.296
Customer Satisfaction	Negative (No eye contact, Nonsmiling face & Backward lean)	Male	3.273	.103	3.070	3.477
		Female	3.013	.103	2.810	3.217
	Positive (Eye contact, Smiling & Forward Lean)	Male	3.928	.102	3.727	4.129
		Female	3.767	.103	3.563	3.970