

# **Erasmus School of Economics**

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## **Topic**

**The Importance of connectivity and bonding in the virtual era**

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## **Abstract**

The objective of this study is to investigate the potential for developing bonds and connectedness in the virtual era, specifically whether verbal and nonverbal communication style and hand gestures can influence bonding and connectedness depending on the recipient's level of openness to experience. The experiment included 121 participants and was conducted online. The data demonstrate that, while bonding and connectedness can occur in a virtual setting, neither the type of communication style nor hand gestures had a significant impact on the development of these outcomes.

*Keywords: Bond, Bonding, Connections, Business Communication, Communication, Formal Communication, Informal Communication, Personality traits, Openness, Non-Immediacy, Hand-gestures.*

# 1. Introduction

The Greek philosopher Aristotle said “Man is by nature a social animal. An individual who is unsocial naturally and not accidentally is either beneath our notice or more than human.”

Another quote by Tom Ford “The most important things in life are the connections you make with others” can describe concisely the landscape of the “dark” times of the pandemic that has come over to the modern world. The scenery of the work environments has completely transformed since the era of the Covid-19 pandemic (2020). And the results are visible; leaders, managers, and employees have been introduced to new uncharted and challenging territories being called to keep operating "business as usual". All, or most, of the actions of corporations, have moved into an online environment, Traditional offices have been reduced or abolished entirely by businesses. Technology is successfully replacing offices, (Davenport, 1998) which until these days, even after two years into the pandemic, remains a difficult transition. Identifying colleagues with the necessary skills, both technical and interpersonal, to work remotely as well as analyzing the efficacy of both people and organizations in virtual environments, pose especially difficult issues for both managers and team members (*Kirkman et al., 2002*). This difficulty partially came due to the fact that employees had to learn how to work from a completely different environment, forced to integrate their home life into their work life (and vice versa), which had negative effects such as additional stress, less motivation and many other work-related issues (*Toniolo-Barrios & Pitt, 2021*).

In these hard times, Web Conferencing Platforms have been in greater use to assist connectivity among the employees of the company. By the term “Web Conferencing Platforms”, we are referring to tools that allow two or more people, who are situated at various barriers of the world, to communicate using video and audio imagery (*Gray et al., 2020*). A tool with such uses is, for example, Microsoft Teams. By enabling businesses to set up internal channels for on-the-spot, in-the-moment meetings, chats, and file-sharing, Microsoft Teams is an integrated

communication platform that makes it easier for teams working remotely to communicate and stay organized. The objective of this procedure is to allow Team members to communicate in real-time through messages, discussions, stipulates, responses, and various other means (*Ilag, 2021*). Similarly, there is Zoom Video Communications. Through this tool, users can meet online through audio and with a choice of video or not. Furthermore, there is the option to record meetings, work together on projects, and share or annotate utilizing a single user-friendly platform, each other's screens (*Chawla, 2020*). Lastly, one other tool for businesses is Slack. Slack workspace aims to organize conversations by storing them in one place where they may be found and used with other applications. Depending on the requirements of the team owners, a workplace may take on a variety of forms. Group phone and video chats can be held using services like Google+ Hangouts and Skype (*Johnson, 2018*).

These tools are of interest as virtual communication skills are expected to play a larger role in producing the next generation of effective "remote" leaders (*Loyless, 2023*).

However, besides the use of these tools, transitioning every operation of the businesses to virtual, caused disruptions in the social bonding that employees were experiencing while being in the office (*Kleiman et al., 2020*). One major issue is the one regarding the lack of physical interaction (non-verbal communication) meaning the synergies that typically follow face-to-face communication (*Cascio, 2000*). There are *numerous* factors to be considered. Challenges arise regarding communication in two dimensions. On the one hand, these struggles concern the way of communication and socializing. On the other hand, the challenges concern the degree to which line managers are able to approach remote performance (*Li et al., 2020*).

As a conclusion of the above it becomes apparent that communication (verbal and non-verbal) is of utmost importance in this transition from the "real life office" to the virtual office. More

specifically, we are going to indulge in the two styles of communication; formal or informal as well as a type of non-verbal communication; hand-gesturing, to examine how this affects interpersonal bonding in business.

As mentioned above, this issue is of great importance and concerns organizations and managers, at a high level, to better understand how and why they should communicate with their team in order to achieve interpersonal bonds in a remote environment.

## **1.1 Academic Relevance**

In a fast-growing virtual society, the bonds created in a face-to-face environment are robust enough to be transferred to the new, virtual reality.

Tools that aid this transfer have been developed, with the aim of creating connections (as mentioned in the introduction) and team building as their primary purpose. However, lack of face-to-face contact, ineffective communication, and difficulties with establishing trust and high-quality relationships are just some of the challenges that virtual teams have in common (Lechner & Tobias Mortlock, 2022).

It is thus important to test the types of communication that are being transmitted through virtual means that could resolve the aforementioned challenges.

### **Reasons:**

#### **Social:**

The social reason for this research is to study the true impact of bonding between employees in a workplace environment where the place for impromptu conversation and means of connecting with each other is limited. A survey conducted by Ten Spot found that more and more people prefer working from home, so as time passes more and more people tend to have

a preference for online working. As the virtual office will replace the regular one it is important to be able to “move” the engagement that takes place in the “real office” to the “virtual office” (Ten Spot, 2021).

### Scientific:

The scientific reason behind this research is that there are many papers highlighting the struggles the global economy and its employees have and keep going through to create a truly integrated work-life (2020). It is, thus, crucial to develop research that will test this newly introduced technology in order to put under the microscope its effects and promises. There are many scholars throughout the years that have been occupied with similar research mostly focused on communication, as communicating is a *process*. This implies that it is ongoing, constantly in motion, moving forward, and evolving. (Wood, 2014). Subsequently, research needs to keep up with every aspect of it and evolve as communication and ways of communicating are vastly changing in the modern world.

### Operational (Business):

Due to the pandemic, many companies were forced to operate remotely. (As mentioned in the introduction). Many of the organizations were not familiar with a such strong dependency on technology to "keep the lights on". Therefore, it will be examined how various types of communication, when it happens online, can influence an organization level.

## 1.2 Research Question

The research that will be conducted is going to test whether informal or formal communication, including an aspect of non-verbal communication as well; gesturing and movement of the hands, affects interpersonal bonding online. This theory will be put to the test through a video stimulating the “new office”.

The research question that is going to be tested is the following:

*Does the type of communication, presence of hand movements, and personality traits have an impact on interpersonal bonding, when communicating virtually?*

### Objectives:

- Determine whether **Informal Communication (compared to formal communication)** can have a positive effect on creating a bond with employees online.
- Determine the role of the personality trait: **Openness** in interpersonal communication and bonding online.
- Determine the role of non-verbal communication: **Hand-gesturing** in interpersonal communication and bonding online.

## 2. Bonding & Communication

In this chapter, we will discuss the components that will be examined. Before we discuss about bonding and communication, we will make a reference to the psychological effects that the



pandemic of Covid-19 brought to the world and thus why people need communication and interpersonal bonding:

## **2.1 Effect of COVID-19 on the loneliness of employees**

Loneliness is explained as a psychological state in which a human being experiences a nebulous yearning for other people as well as the awareness of feeling separated from another or others. Another definition of loneliness is an unpleasant sense of being alone and a desire for interaction that is different from what is now occurring (*Bekhet et al., 2008*).

There is a great deal of information that supports the argument that connectivity and socialization are crucial for preserving mental health. Social interaction, involvement in society, and participation have been linked to both psychological and physical well-being (*Sahu et al., 2020*).

As mentioned by Graupmann and Pfundmair (2022) the isolation of a human being can have tremendous negative effects on their self-esteem as well as to their feeling of being in control and finding meaning on even the minor daily tasks.

More specifically, in the business environment, when the pandemic struck, most employees were introduced to Working from Home (or WFH). WFH, by definition, is referred to as remote working, teleworking, and telecommuting. It is recognized as a type of flexible work arrangement that permits employees to work from home or another off-site location (*Rahman & Zahir Uddin Arif, 2021*).

Even before the appearance of the pandemic and forced remote work, there was a term that had been developed to explain the feeling of being "left out" in virtual working environments. This term is referred to as "cyber ostracism", and its definition signifies precisely the sentiment of being abandoned. After the pandemic overcame the world, these feelings are more accurate

than ever. The isolation that came with Covid-19 increased the "cyber ostracism", leaving employees feeling stressed, alone, and unwanted. Consequently, this has decreased working effectiveness and performance as there is high impingement of employees' well-being, which is highly correlated with how they handle working tasks (Yang et al., 2022). Additionally, in research from Galanti et al. (2021), it was found that social isolation is significantly and negatively correlated with WFH outcomes related to job productivity and engagement and positively connected with WFH stress-related levels.

## **2.2 Interpersonal bonds between employees and their importance:**

By definition, bonding is used to describe the emergence of a tight, interpersonal bond (Gangestad & Grebe, 2017). Another definition supports that social action's relevance to other people's behavior is its fundamental quality. It concludes that people cannot survive in social isolation and therefore must connect with others (Institute of Medicine & Division of Health Promotion and Disease Prevention, 1992). In a search from Gable & Bromberg (2018), it is mentioned that when John Donne observed that "no man is an island" in the seventeenth century, he was making the observation that people don't appear to thrive in isolation from one another. Similarly to this, psychologists have stated that social connections are necessary for human survival as well as flourishing. Yet another study suggests that interpersonal relationships contribute to maintaining or improving both physical and mental health. (Rook, 1985). However, when referring to interpersonal bonding we need to take into consideration the different backgrounds of individuals, meaning the different cultures of each individual. Because of a lack of mutual knowledge of cultural differences, it is difficult to form intercultural ties (Javidi & Javidi, 1991).

Javidi and Javidi (1991) suggest four stages of relationship growth in their social penetration theory: (a) orientation, (b) exploration, (c) affective interaction, and (d) stable exchange.

However, the social penetration theory was expanded, and five stages of interpersonal connection growth were proposed: (a) initiating, (b) experimenting, (c) intensifying, (d) integrating, and (e) bonding.

The conclusion of the above leads to the fact that interpersonal connections are vital in people's lives.

### 2.2.1 Importance of friendship at work:

Positive interpersonal ties are referred to as social bonds, and they are a crucial aspect of developing a commercial relationship. Personal relationships, such as the degree of personal friendship and love shared by both people concerned, are formed through interpersonal interaction (E. Wang, 2014). According to Sias & Cahill (1998), workplace friendships have a significant role in institutional engagement and individual career development, performing important functions including both firms and people. More specifically and having as a factor the human aspect it is supported that "Friends offer support and third-party influence on crucial decisions, assist in locating employment and prospects for promotions, and communicate cautions regarding policy adjustments and "rumblings upstairs."

That kind of relationship can also improve productivity and make work more fun. (Sias & Cahill, 1998). As previously stated, the feeling of friendship is highly valued. Research examining opinions about "what makes life meaningful" discovered that nearly all respondents mentioned friendship in their answers (Davies & Aron, 2016).

In research from M. E. Fay and Kline (2011) it was discovered that for remote workers, coworker liking was positively correlated with teleworkers' commitment to their organizations, their level of job happiness, and their contentment with informal connection with coworkers.

Because of teleworkers' emotions of isolation and uncertainty, high-intensity teleworkers may need to adopt interaction patterns in order to maintain their identities with coworkers and supervisors. Given the likelihood that telework will become more popular, research into the informal communication behaviors of high-intensity teleworkers becomes warranted.

Face-to-face encounters, which are widespread in co-located situations, are less common for remote employees and their colleagues, but they are nevertheless vital for finding common ground and building interpersonal ties. (M.E. Fay and Kline, 2011).

## **2.3 Communication:**

### 2.3.1 Communication and its importance:

To try to understand the creation of interpersonal bonding in an entrepreneurial environment, we must first understand the means which lead to that, communication. The word itself; "Communication" originates from the Latin word "communis," which means "common". Hence, the verb "to communicate" incorporates verbal, non-verbal, and electronic forms of human interaction and meaning "to make common," "to make known," or "to share." (VELENTZAS & BRONI, n.d.)

Another definition by Stevens (1950) suggests that communication or interpersonal communication, "is the discriminatory response of an organism to a stimulus."

According to this concept, communication happens when an organism is affected by an environmental stimulus (the stimulus) and responds to it (makes a discriminatory response). There hasn't been any communication if the organism rejects the stimulus. The differential

reaction of any kind is the test. Communication is not complete if the message receives no response (Stevens, 1950).

On a social level, as suggested by Wang (2009), there can be no doubting about the significance of interpersonal communication in the advancement of our society as a whole. Individuals are unable to grasp one another, collaborate, or constantly improve human society without interpersonal communication. Language, gestures, facial expressions, and other means of communication are used by people. Therefore, the communication that takes place can be more efficient and gradually lead to social development. Another definition for communication suggests (Luhmann, 1992c): Communication is an emergent reality and a “sui generis” state of things, just like life and cognition. It is the consequence of the combination of three independent selections: the knowledge chosen, the statement selected, and the comprehension or meaning given to the statement and the information it includes.

None of the above components can function independently. They can solely communicate when cooperating with one another. Purely through collaboration, which is only when it is possible to make their selectivity coherent. A difference in utterance and information must therefore be comprehended for communication to take place.

In general, unintentional or deliberate communication may take the form of spoken or other modes, conventional or non-conventional signals, and linguistic or non-linguistic forms.

But why is communication so important?

Communication serves not only to convey and exchange crucial information, but also to establish and maintain relationships, foster unity, establish contacts, and create bonds (Pluszczyk, 2020). To conclude, the importance of communication in the workplace is growing as more and more individuals work in teams. (Röcker, 2012).

For this research, we want to indulge as seen below in communication in organizations and examine the use of it in the virtual era:

### 2.3.1.1 Communication in business

In a more formal and business environment, interpersonal communication (IPC) has become increasingly important. IPC is of utmost importance in the context of globalization and privatization, where economies of developed and developing countries are shifting from being industrial to being service-oriented. This has put IPC at the forefront of all other skills that aid in the growth and sustainability of businesses. The development of relationships among coworkers, peers, departments, organizations, and consumers is highly valued in the modern service economy. Of course, the purpose of corporate communication is to build and keep these relationships. (Ramaraju & Phil, 2012b). More specifically when referring to internal communication of a business: Interpersonal interaction is the means of conveying knowledge and understanding between individuals, and it is crucial for the success of any company. Thus, it needs to be managed well to ensure that the organization's objectives are met (Singh, 2014). Singh (2014) suggests that interpersonal communication places a focus on how organizational structures impede employee communication that serves to brand the company, as well as how interpersonal communication itself affects organizational structures.

The simplicity or complexity of the organizational structure affects how simple or difficult the interpersonal communication process is.

In another study by Pincus (1986), it is suggested that a favorable perception of the communication environment is intuitively thought to significantly increase organizational effectiveness by most researchers and experts.

In correlation with the present research, T Fritz et al. (1998) support that currently physical workplaces are being replaced by "virtual offices,". In many firms, the "virtual office" does not

actually exist, but new office settings are emerging where work is done at places other than the typical corporate office.

Telecommuting is an innovative work environment that is gaining popularity. Employees that telecommute do so from their homes rather than the company's offices. Although "full-time employees who stay at home and work" have been classified as telecommuting.

For employees, it has been discovered that working remotely is a productive environment—employees frequently mention higher concentration and production levels. However, telecommuting offers a desirable workplace alternative for many businesses since it can result in cost savings and utterly give employees the flexibility, they need to adapt to changing lifestyle demands. Even though telecommuting seems an easy solution for workers, managers, on the other hand, are worried about how this vast change will affect communication (T Fritz et al. 1998). For many types of communication, physical appearance is required thus the question remains on how to make a transition of this kind of communication in the virtual world.

Thus, it is crucial to put to the test the communication that takes place in the digital era, which will be examined in the current paper.

#### 2.3.1.2 Communication and bonding:

Organizations, as well as their PR specialists, are realizing more and more how crucial it is to improve internal communication with employees. Building an environment of transparency between management and staff requires effective internal communication (Mishra et al., 2014). It is known (Fritz et al., 1998) that communication holds the same importance in business as it does in generally an interpersonal level of communication as interaction among team members that is social or unrelated to tasks is a crucial component of office communication. Social

interactions between group members are how roles, definitions of authority, and interpersonal appeal and compatibility are created. Social contacts make it possible to establish common ground for communication, boosting the effectiveness of communication and improving people's capacity for teamwork (Fritz et al., 1998).

The correlation between communication and bonding is an aspect that has been discussed thoroughly by scholars; however, how these two concepts collide in the virtual world will be presented in this research.

The following styles of communication will be put to the test and discussed:

### 2.3.2 Informal Communication

It is observed (Kraut et al., 1990b) that informal conversation is a major activity at places of employment. Even though it appears that this kind of dialogue is spontaneous and in a more relaxed mode, this does not get in the way of the work.

When considering the discussions in organizations, informal communication is viewed as a redundant category with multiple interpretations. In accordance with that, informal communication is what remains when norms and hierarchies are removed from the way of speech.

Employees adopt an unofficial role when discussing informally and refrain from trying to resolve professional issues through their exchanges. Employees connect with colleagues as well as acquaintances or friends in order to establish and preserve relationships with them. Informal dialogue might be about personal matters, but it can also be about fellow employees, the organization, or certain duties (Koch & Denner, 2022).



It has been acknowledged that one of the "latent functions" of work that supports employee well-being is this kind of social interaction. Such casual social interactions with others may enhance well-being by fostering a sense of community and elevating the moods of individuals taking part. In fact, a lot of empirical evidence points to a link between simple social interaction and happiness as well as general subjective well-being (Winslow et al., 2019).

To better interpret spontaneity, communication is at the core of what we refer to as informal communication. Discussions are happening right now, with the people present, and with the subjects at hand. There is no set time for any of these elements—timing, participation, or agenda. Additionally, as the dialogue progresses, it adapts to reflect the participants' most recent interests and comprehensions (Kraut et al., 1990b), the interpersonal exchange of messages, thoughts, and feelings is referred to as social communication, and it is an essential requirement (Röcker, 2012).

Even more importantly, according to researchers (M. E. Fay, 2011), informal engagement may be a main strategy for establishing common ground, completing work, and last but not least forming significant interpersonal bonds among employees.

But the way that a person is perceived when informally talking through video will be analyzed with this thesis.

For the aforementioned reasons we conclude with the formulation of the first hypothesis

**H1: *Informal communication has a positive effect on bonding.***

### 2.3.3 Formal Communication

It is observed by Gomez & Dailey (2017) that a key component of the discipline of organizational communication is formal communication.

More specifically, as it is natural Formal Communication takes place in the place of business and constitutes an essential component of the discipline of organizational communication. This style of communication is described as goal-oriented, explicitly stated, function-related communication that moves up the hierarchy, adheres to set rules, and transcends time and location.

A formal structure distinguishes the people who are the social information sources and the information that is of particular interest to them. This has traditionally been the perspective of managers and qualified business communicators. As roles dictate relationships, managers see structure as a rigid item that fits into a top-down design. This viewpoint, known as the configurational view, places an emphasis on the authoritative coordination of work in support of clearly specified organizational objectives. According to recent studies, formal approaches emphasize configurations emerging from formal authority connections represented in the organizational hierarchy, from the specialization of labor into separate tasks, and from formal systems for the coordination of work (J. D. Johnson et al., 1994).

In general, formal organizational communication adheres to certain rules to follow an organization's structure. The message content, which is largely management controlled, flows in distinct and structured directions: *downward, upward, and horizontally* (Allen, 2016).

*1) Downward messages* generally involve:

- goals strategies, and objectives
- job instructions and rationales
- procedures and practices
- performance feedback and socialization.

*2) Upward messages* routinely focus on

- problems and exceptions
- suggestions for improvement

- performance reports
- grievances and disputes
- financial and accounting information.

3) *Horizontal messages* focus on

- intradepartmental problem solving
- interdepartmental coordination

According to Ali and Abdollahi (2010), formal communication increases trust, boosts satisfaction overall, lowers coordination costs, reduces conflict, and lessens the negative impacts of rumors, all of which contribute to productivity and job satisfaction, thus stressing its important role.

## **2.4 Non-verbal communication - Hand movements:**

From the early 1960s researchers had started occupying the matter of Non-Verbal Communication. It was not very long after that when the significance of this type of communication was discovered and transformed the way researchers viewed social behavior. Until then, social psychologists were perplexed by the nuances and intricacies of social contact and frequently analyzed it in terms of how long interactions lasted or who spoke the most frequently. A new level of analysis has now been opened, taking into consideration the level of head nods, hazy shifts, hand-gesturing, bodily posture, and so on (Hinde & Hinde, 1972).

In a broader definition, it is observed that the context of what a person says is not as important as how they say it. All interpersonal relatedness includes nonverbal signs such as facial expression, posture, and tone of voice. Nonverbal cues not only express emotion, but also regulate bodily physiology, emotions, and interpersonal behaviors (Pally, 2001).

More specifically, Pally (2001) underlines that as words alone can never fully express real experience, more emphasis should be placed on nonverbal aspects of communication.

As it is mentioned earlier in this section, non-verbal communication can take a lot of forms such as posture, expression, tone of voice, and hand gestures.

For this research we are going to occupy with a specific aspect of non-verbal communication: Nonverbal immediacy, which is defined as the collection of nonverbal communicative acts that reflect psychological availability, indicate affiliation and preference and lead to apparent interpersonal closeness (Mayor, 2020).

The immediacy concept is made up of several nonverbal behaviors that have been researched. These behaviors include: (a) a reduction in the proxemic distance (b) an increase in touch (c) an increase in eye contact or gazing (d) a favorable facial expression, notably a grin (e) a positive head nod (f) an increase in gestures (g) a body relaxation. (Andersen et al., 1979). More specifically, we want to examine the increase in gestures (or hand movement) and its effects when communicating.

Scholars come in contradiction when it comes to non-verbal communication and how this relates to verbal communication or acts on its one. In addition, much research has been maybe in terms of studying in-depth non-verbal communication, its forms as well as its link with the interpersonal connection.

However, little is known about what happens when non-verbal communication is being transmitted through virtual means, such as a video call. Opening an interesting subject to the world to see how hand gesturing can be perceived or noticed at all through a virtual interaction.

As a result of the underlying theory and the preceding debate, the following hypotheses are developed:

**H2: *Bonding will be stronger when the speaker's hands are visible compared to when the hands are not visible.***

**H3: *The positive effect of informal communication online on bonding will be stronger when the speaker's hands are visible.***

## **2.5 Personality trait: Openness as Moderator**

According to various scholars, there are big five personality traits or "Big Five". The broad acceptance of the Five Factor or "Big Five" personality model, which holds those five major characteristics: a) Neuroticism or Emotional Stability b) Extraversion/Introversion c) Openness or Intellect c) Agreeableness or Friendliness, d) Conscientiousness or Responsibility (Chamorro-Premuzic & Furnham, 2009).

In this research we are focusing on one of these dimensions, more specifically we will examine the personality trait of Openness.

Openness is associated with active imagination, aesthetic sensitivity, openness to inner feelings, preference for variety, intellectual curiosity, and judicial independence. People with high openness scores present signs of curiosity about both their inner and exterior worlds, and they tend to indulge and seem keen to discuss fresh ideas and unconventional beliefs. In contrast to closed individuals, open people tend to experience happy and negative emotions more acutely.

In addition, highly open people appear to possess characteristics such as inventiveness, flexible thinking, and culture. Fantasy, aesthetics, sentiments, behaviors, ideas, and values are all aspects of openness (Matzler et al., 2006).

Furthermore, Openness is believed (McCrae, 1996) to be the most contentious of the five factors as it is associated with intelligence and dismissed as "bookishness". However, McCrae

(1996) also argued that despite the “classic” beliefs on what Openness appears to be, it is defined better as a fundamental way of looking at the world, influencing not just internal experience but also interpersonal interactions and social conduct.

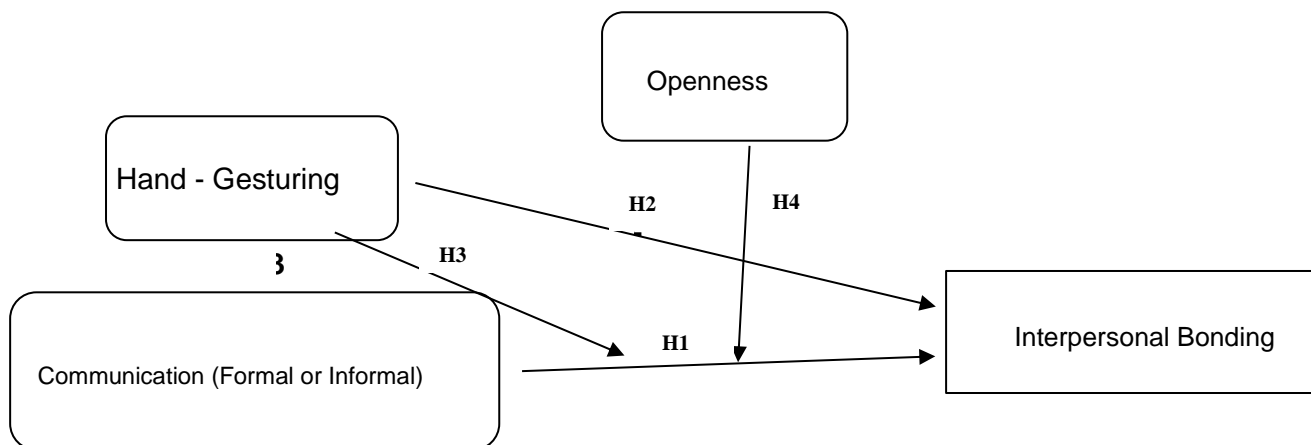
Based on the aforementioned claims about Openness, this personality trait will be examined as a moderator to conclude to what degree it could affect interpersonal bonding in comparison to a closed-up person.

Complementary, based on the background theory and the preceding discussion the following hypotheses is formulated:

**H4: Openness will moderate the effect of the communication style on bonding; Bonding will increase more for open people than closed people when the communication is informal.**

## 2.6 Conceptual Model:

The conceptual model that is presented below, depicts the two *independent variables* which are examined: **Communication & Hand-Movement (Non-Verbal Communication)**, and how these could lead to the *Dependent variable: Bonding, Moderated by Openness*.



## 3. Methodology

In this chapter, the design of the experiment is discussed. We will begin by explaining the method that was used and later we will discuss the variables as well as the measuring scales that were used to calculate them. Following that, the procedure, data collection as well as validity and reliability of the research will be described and explained.

### 3.1 Research design:

For the purposes of this research, an experimental method was chosen. The study had a 2 x 2 between-subject design: communication style (formal vs. informal) x hand movements (visible vs. not visible). Four videos have been created for the four conditions. In the scenario of these videos is a person who is just hired as a manager and addresses their new team through a 30-second video message. In the formal condition, the speaker provided only information about their education and experience. In the informal condition, the speaker provided some information about their education and experience and included information about their personal life, to separate the formality of speech. In the visible hand movement condition, the hands of the speaker were visible, and in the not visible condition, the hands were below the camera frame.

Additionally, the online experiment was chosen because online studies provide success as they can quickly and efficiently recruit many participants, are generally inexpensive, and provide access to a larger population than traditional lab studies involving students. They may even be representative of the internet population. Also, it appears that the outcomes of such online tests provide reliability (Palan & Schitter, 2017).

However, conducting an experiment could also have drawbacks. One example is, with the experiment participation being voluntary, the comparatively high dropout rates. If there are

dropouts, during the process that could lead to inaccurate results in the direction of an experimental causal effect (Reips, 2000).

The sample included a mix of gender, ages, and working status, starting from 18-year-old participants and having participants up to 60 years old. This variety could potentially help in having realistic results, as it is mixing a group of different backgrounds, cultures, and ages.

### 3.1.1 Measures:

The following measures were used in this study:

- a) Dependent Variable: Interpersonal bonding

To assess this variant, two scales, – extracted from *Watanuki and De Oliveira Moraes (2023b)* were chosen to support this effort: A) Affect based and B) cognition based. As seen below:

Construct	Items
Affect-based trust beliefs.	<p>I feel we can have a sharing relationship where we can both freely share our ideas, feelings, and hopes.</p> <p>I feel I can talk freely to this individual about the difficulties I am having and know that (s)he will want to listen.</p> <p>I feel that if I shared my problems with this person, I know (s)he would respond constructively and caringly.</p>
Cognition–based trust beliefs (McAllister, 1995)	<p>This person appears to approach his/her job with professionalism and dedication.</p> <p>Given this person’s track record, I see no reason to doubt his/her competence and preparation for the job.</p> <p>I can rely on this person to not make my job more difficult by careless work.</p>



b) Independent Variable: Communication formal or informal

To measure the impression made to the participants regarding communication (formal/informal), an item (measuring scale) from the research paper of Burgoon and Hale (1987) was extracted and used. This item is indicative to assess whether people can distinguish the formality of the speech. Meaning if they can recognize whether the speaker is communicating in a formal or in an informal way.

Factors and Items
-------------------

VIII. FORMALITY	He/she made the interaction very formal
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c) Moderator: Personality Trait Openness:

To measure the above, it was important to include a measuring scale that could showcase if "openness" as a personality trait could impact the impression and immediate effect made on the observer of the videos. In other words, with this scale, we want to test if a person with high openness can more easily create interpersonal bonds.

The measuring scale used to measure openness was derived from Rammstedt and John (2007) and the items that were used are seen below:

A) I see myself as someone who has a few artistic interests

B) I see myself as someone who has an active imagination

## **3.2. Experimental Procedure:**

### **3.2.1 General**

The procedure that was followed to execute the present experiment will be mentioned in this chapter.

For the purposes of this experiment four videos were created. Two of them included formal communication and two of them informal communication (independent variable). The reason behind the creation of two videos for each style of communication was to correlate hand movement with communication and test its effects.

At the beginning of the survey participants were introduced and an explanation of the survey was shortly given. Following that, it was mentioned that participants were about to watch a 30-second video, where a newly hired senior manager of the company would make an introduction of himself/herself. For the purposes of randomizations, a technique of randomization for the videos was used through the Qualtrics tools and reflected that an equal number of people would watch each video.

Respondents were asked to pay thorough attention to the speaker. In the next step, they were asked to answer a series of questions that reflected the dependent variable: Bond based on the impression and feeling that the speaker created to the attendee. All answers to the questions

were given based on the Likert scale, where attendees had the option to choose an answer from “Strongly disagree” to “Strongly agree”. For all the questions, requirements were put through Qualtrics ensuring that respondents were obliged to answer all questions (an asterisk indicated the mandatory character of each question, no question could be skipped by setting from the tools the “Require Response”)

The next set of questions was regarding the independent variable, style of communication, where attendees judged the formality of speech.

Respondents were given a question with a predetermined answer in order to gauge how much attention they paid throughout this process.

Moving forward the participants were asked two (2) questions based on the moderator, Openness, to determine whether the person taking the survey had an open or not personality and how this could affect our results.

Lastly, attendees were asked some demographic questions in which they had to input their gender, age, and professional status. This could help determine if younger or older people are open, how they perceive messages, and in general react to different styles of communication.

### 3.2.2: Questionnaire Analysis:

In this section, the questionnaire build, and logic will be analytically presented. In total the questionnaire included 13 Questions in which the attendees had the choice to answer based on the Likert scale from "Strongly disagree" to "Strongly agree".

On the first page, participants were thanked for their time spent on the questionnaire and the email of the research was given in case of questions that maybe would appear.

On the second page, specific instructions were given on the video that attendees were about to watch. It was underlined that they would watch a 30-second video in which a newly hired senior manager would make an introduction of themselves.

After that, attendees watched one of the four videos that they were randomly presented with.

Following, the measuring scales for bonding took place, consisting of 6 questions, in total. The scales that were used were two.

The first scale that included the first 3 questions was about the perception of the participants on the competence of the presenter. For example, attendees were asked if, in their personal opinion, the depicted person in the video appeared to approach their job with professionalism and dedication. The remaining 2 questions had a similar structure.

The last three questions concerned what kind of feeling the speaker created for the listeners, more specifically if they felt at ease and safe and thus could potentially create a bond.

On the next page, respondents were asked two questions regarding the independent variable. The questions were structured on a Matrix table as Qualtrics gave this option. The first question was about the formality of the conversation as per the perception of the attendee and after that an attention check question was placed, in which participants had to give a predetermined answer.

On the fourth page, there were two questions that concerned a personal perspective of the participant for themselves. This question was about the moderator: openness and was placed

to test whether the participant was open or not evaluating the aforementioned on whether the attendee would check “Strongly disagree” or “Strongly agree”.

On the sixth page, the last page including questions, demographic elements were presented more specifically questions on gender, that took values from male, female, non-binary & 3<sup>rd</sup> gender and preferred not to say. The question that concerned the age was an open question where the attendee could complete it with the use of numbers to determine their age. Lastly, attendees were asked about their professional status and had the choice between intern, working student, working professional, and unemployed.

Lastly, participants were thanked for the time they spent completing this questionnaire.

In Appendix 1. The questionnaire is presented.

### **3.3. Data Collection**

The experiment that took place to assist the survey began on the 31<sup>st</sup> of March. The participants that contributed were in total  $N=143$ . However, after clearing out the data the attendees from which the data were analyzed were  $N= 137$ .

To ensure data protection, the survey that was conducted was anonymous and participants were asked to input only their age, and gender as a personal data indicator.

To be able to have validity of data an “Attention check” question was placed where from the primary sample of 137 who completed the survey, as mentioned earlier, the 121 was valid used data.

From the 121 participants, 38.8 % were Male, and 61.2% % were Female. The ages varied, as mentioned earlier, between 18 and 60 years old. The percentages created were 43% were 18-25 years old, 36.4% were 26-32 years old, and 20.7% were 32+ years old.

The aforementioned wide age variety assisted the process overall as the image that we had was more realistic and objective. Given the fact that people that are familiar with the new technology participated along with people that are not at ease with using this kind of technology.

Another significant factor that aided the purposes of this experiment was that participants were from different geographical locations. Many people participated from different European countries thus having a multicultural background aided the experiment in terms of objectiveness.

Subsequently, the current experiment provides data from two different angles: on the one hand, participants who are familiar with this recently introduced technology and functioning only online; and on the other hand, participants who might have difficulty regularly operating in an online environment. The age variety combined with the cultural variety secured the objectivity and reliability of the research.

### 3.3.1 Sampling:

The means that were used to distribute the survey was through 'snowball sampling'. By definition, snowball sampling technique snowball sampling is based on the principles of networking and recommendation. The researchers typically begin with a small number of initial contacts (seeds), who are recruited to participate in the research because they meet the requirements. The willing participants are then requested to suggest further contacts who meet the research criteria and may find other willing participants, who in turn suggest additional possible volunteers, and so on.

As a result, researchers leverage their social networks to create initial connections, and when momentum for sampling grows from these, they can sample an increasing number of people. ("Snowball Sampling," 2020c)

The survey was shared mostly through a link that led to the questionnaire which was posted on social media: LinkedIn, Facebook, Instagram, and WhatsApp. Another distribution method was word-to-mouth, as multiple sources that had already completed the survey shared it within their social circles. (Snowball sampling). Through these channels, a wide range of respondents was created.

## **4: Data Analysis and Results**

The outcomes of the experimental design are reported in this chapter based on data analysis.

### **4.1. Descriptive Data Analysis:**

Starting with the analysis, the Cronbach reliability index of the Bonding scale taking into account its 6 questions as shown in the table below is 0.953. This shows a high level of internal

consistency for the scale with this particular sample which means it measures bonding in a reliable way.

Scale Reliability Statistics

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Cronbach's $\alpha$	
scale	0.903

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Next, to analyze the aforementioned data an ANCOVA-2 ways was performed in the statistical analysis program SPSS. The dependent variable was the bonding score created from the bonding scale that was used and two independent variables and one covariate.

The first independent variable was on non-verbal communication and more specifically hand gesturing. Two conditions were examined for this category: a) hand appearance b) no hands appearance. These conditions were tested regarding the video that participants watched.

The second independent variable tested the communication style, with 2 categories formal or informal.

Also, the variable *Openness* was used as a covariate, which was the moderator for this experiment. Through this measurement, the purpose was to understand whether there is a difference in mean bonding scores between the categories created by the independent variables, even after accounting for openness.



Homogeneity of Variances Test (Levene's)

F	df1	df2	p
0.156	3	117	0.926

*Table A*

Results are presented in *Tables A & B*. In *Table A* the p-value of Levene's test is presented which is 0.926 and depicts that the assumption of equal variances is not violated. The results of the model are presented in *Table B* tests of **Between- Subjects Effects**:

*Test Between-Subjects on Bonding:*

**Dependent Variable:** BONDING\_SCORE

Source	Type III Sum of Squares	df	Mean Square	F	P
Corrected Model	6.638 <sup>a</sup>	5	1.328	1.942	.093
Intercept	66.261	1	66.261	96.897	.000
Hand_gestures	2.766	1	2.766	4.044	.047
Openness	2.473	1	2.473	3.616	.060
Communication style	1.353	1	1.353	1.979	.162
Communication style* Openness	1.332	1	1.332	1.948	.165
Hand_gestures * Communication style	.114	1	.114	167	.684
Error	78.641	115	.684		

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R Squared = .078 (Adjusted R Squared = .038)  
Table B

The significance level was defined as  $\alpha=0.05$ . The main effect of communication style on the Bonding score was not statistically significant since  $F(1, 115) = 1.979$ ,  $p=0.162>0.05$ , therefore **H1** is not supported. On the contrary, hand gesturing presented a significant main effect since its  $F(1, 115) = 4.044$ ,  $p=0.047<0.05$ . The mean bonding score for video *without hands* was 4.09 and the mean score for video *with hands* was 3.8. Due to the fact that the main effect of hand gesturing was statistically significant and according to the observed mean scores for the two categories, can be concluded that watching a video without hands causes a larger bonding score than with hands. Thus, **H2** is not supported, and evidence of the opposite direction effect is found.

The covariate variable Openness was not statistically significant since  $F(1, 115) = 3.616$ ,  $p=0.06>0.05$ .

The interaction between the two independent variables (communication style & hand gesturing) as shown has a corresponding  $F(1, 115) = 0.167$ ,  $p$ -value  $0.684>0.05$ , and leads to the conclusion that there is no significance, therefore **H3** is not supported.

Similarly, the interaction between the two independent variables (communication style & Openness) has a corresponding  $F(1, 115) = 1.948$ ,  $p= 0.165>0.05$ ,  $p$ -value  $0.165>0.05$ , which again leads to the same conclusion that there is no significance, thus **H4** is not supported

# 5: Discussion

## 5.1. Theoretical Implications

The amount of significance in communication and bonding is explored in the introduction of this study. It is underlined through various sources in Chapter 2, how important communication and interpersonal bonding are in all aspects of life. More importantly, insights were given in terms of the invasion of virtual life into businesses and how organizations needed to operate. After the Covid-19 pandemic that put a stop to every action of enterprises, employees had to face an enormous number of issues that arose. It was clear that the one effect that was caused by Covid and was considered a “hot topic” among discussion was the psychological ramifications of converting every action from face-to-face into a digital environment (*Toniolo-Barrios & Pitt, 2021*).

Since then, many studies have been developed that supported solutions and how employees could be supported as well as the kind of actions and measures that needed to be taken by managers. However, the aim of this paper was to indulge further in the type of communication (verbal & non-verbal) and how this could result in bonding when faced with practical limitations. The topics that were discussed thoroughly were communication in all its forms, depicting the landscape of connectivity mostly in business. Communication can take a lot of forms but the two aspects that are related mostly to businesses are informal and formal communication. These two styles were analyzed and assessed on how they are interpreted,

under what circumstances they were put in use as well as the effects on them on interpersonal bonding and the development of connections. Even though the hypothesis developed in this paper could not be confirmed, that "*Informal communication has a positive effect on interpersonal bonding*", previous research (M.E. Fay and Kline, 2011) shows that this theory is valid and supported.

Another issue that was put under the microscope was non-verbal communication, more specifically in terms of hand-gesturing. The attributes as well as effects of hand gesturing when correlated with communication is of high importance (Hinde & Hinde, 1972). Moreover, it was highlighted that formerly the role of this component was not regarded as important as verbal communication and researchers didn't hold it in high regard. However, with the passage of time, more and more scientists took an interest in interpreting and understanding non-verbal communication in all of its facets. Non-verbal communication was categorized and analyzed accordingly. Furthermore, in most recent studies the importance of non-verbal communication (or non-verbal immediacy) is being emphasized and is considered equal to the significance of verbal communication (Pally, 2001). The hypothesis that was developed in this paper, that the appearance of hand-gesturing when communicating could positively influence bonding, could not be confirmed. However, an interesting finding was that the opposite of this hypothesis, meaning that when hands were not visible in communication, led to a higher bonding. This fact opens up a whole new world for scientists to explore and discover the role of hand-gesturing when communicating. Nevertheless, theory and different studies support the notion that nonverbal immediacy (facial expressions, hand gesturing, and body movements) can have a positive impact on communication and how a person is viewed.

Lastly, personality traits were discussed as they play a crucial role in communication. (Chamorro-Premuzic & Furnham, 2009). More specifically, Openness was examined. Openness as a personality characteristic is correlated with high artistic interests, and vivid imagination (Matzler et al., 2006). This component has occupied scientists (McCrae, 1996) as it is of utmost importance in how interpersonal relationships are formed. When a person is closed the whole communication process meets difficulties and barriers. On the contrary, when a person is open, interpersonal connections are easier to form as openness is also related to open-minded people. This means that individuals that possess this characteristic can develop easier connections with a wide variety of people, regardless of their background, religion, beliefs, and personality. For this thesis openness was used as a moderator between communication and interpersonal bonding, to examine if and to what degree it could affect communication. After the analysis of the data, the conclusion that was reached showcased a minor insignificance but because the number was extremely minuscule, we could say that these two components appear to have a relationship. Even though the hypothesis was not confirmed, literature supports that these two variables have a correlation and more specifically Openness influences how people develop relationships or even if they develop interpersonal connections in all aspects of their lives.

This thesis could contribute to the scientific community as it showcases how people react when viewing an individual through a video. More specifically, the experiment conducted can aid in understanding better the nature of human relationships in organizations, when interactions happen solely in a remote environment. Furthermore, it can help businesses in developing perspectives on how to communicate messages in a digital environment, how employees could perceive a manager, and what language of communication could be the most effective to develop interpersonal bonds with a team within an organization.

Lastly, even though all the hypotheses developed in this paper could not be confirmed, various scholars analyze the relationship between the style of communication and correlate it with openness and bonding.

## 5.2 Limitations and Suggestions for Further Research:

For this experiment, as components to measure connection and interpersonal bonding Openness, Type of verbal and non-verbal communication were taken into account. However, when discussing a matter as enormous as communication the aforementioned components are solely a small combination that could influence communication and bonding. Therefore, there is a limit on what this survey could result in as to be able to analyze communication much more components should be taken into consideration for example all the personality traits and their effects when communicating, more in-depth of the psychology of people and how they operate. Generally, more insights on people's behavior should be tested, aspects that are related to psychology and sociology. Human behavior is a multicomplex subject and an unpredictable factor. This means that the way that everyone develops relationships could have some common characteristics in general but could also vary from person to person.

This survey is limited on the grounds that individuals that participated in this experiment were only 121. This sample could be considered a minor specimen to interpret and analyze such an important and complicated matter as communication. Furthermore, individuals that completed this research (as mentioned in 3.3) were geographically located in 3 to 4 countries in Europe. This sample cannot provide clear objectivity as, even though participants came from different cultures and backgrounds, individuals come mostly from the Western and developed parts of

the world. Also, in order to have a clearer image this survey should be taken in other parts of the world where organizations are both more and less developed. Furthermore, the ages that participated in this experiment varied. For the younger ages that participated, seeing someone on video was a more familiar situation. More specifically for the ages 18-30, during the times of Covid-19 students (18-24) as well as workers (25-32) were already introduced to the virtual era of working or taking online classes. For the students, the transition from online classes to an online working environment will not be a harsh one and for professional workers, the new reality is mostly working hybrid or fully online with a few exceptions of being fully on-site. Having a familiarity with this kind of operation either at a student level or a work level gave an advantage as to how at ease they could perceive a person talking online rather than face to face. However, having to operate hybrid or remotely still presents a relatively new difficulty for the older participants, between the ages of 40 and 60, even for those who are still in the workforce. This is because, for most of their time in their careers, they were accustomed to a different manner of operating, which is very dissimilar from the current situation. Therefore, barriers and limitations are created again by the sample taken.

Lastly, yet another limitation that exists is related to the fact that technology develops vastly, and this research could easily be out of date in a very small amount of time. Additionally, to be able to measure connectivity through video, components such as games and activities that are implemented on platforms and have begun to vastly develop should have been implemented. The aforementioned limitation could potentially give space for scientists on research that could be developed in the future and could give a clearer image of how people communicate in the new virtual world.

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## Appendix 1: Questionnaire

### *Questionnaire in Qualtrics:*

#### First Page- Introduction:

Introductory Block 1

Introduction  
Dear participant

Hello, welcome to the survey and thank you for taking the time to fill it out in advance.

The information gathered will be used for academic purposes only!

You should allow 5 minutes to complete the survey.  
Answers to the following questions should be truthful.

If you have any questions please contact me at 623984ed@student.eur.nl

Your time and effort are greatly appreciated!

#### Second Page – Introduction to Videos:

Block 2 - Introduction to Videos

Introduction Videos

In the following page you will be redirected to a video.

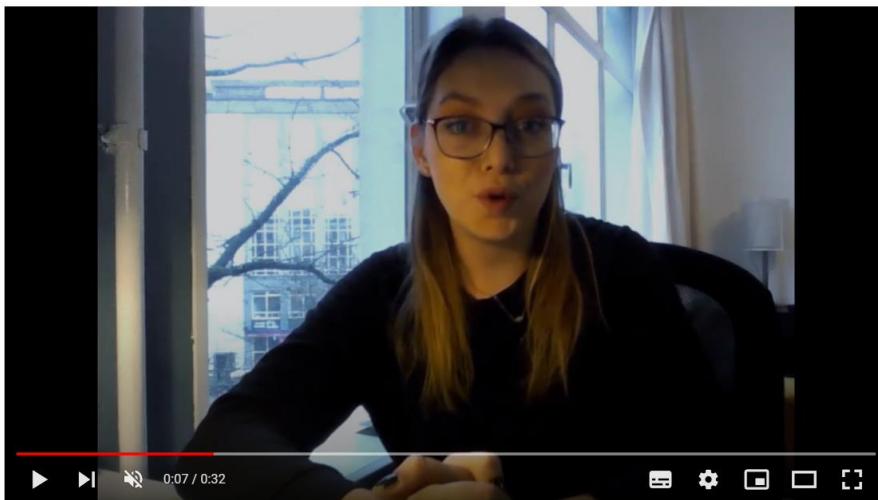
On that 30-second video you will watch an employee who just got hired in a new position as a senior manager.

The new manager is making an introduction of themselves to their new leading team.

Please, watch the video carefully as you will be asked to answer some questions based on the content of it.

Third page– Blocks 3-6 Videos:

Video 1- Formal Communication with presence of hand gesturing:



Video 1

Video 2 – Formal communication without presence of Hand gesturing



Video 2

### Video 3 - Informal Communication without presence of Hand gesturing



Video 3

### Video 4 – Informal Communication without presence of Hand Gesturing



Video 4

### Fourth Page – Questions on dependent variable

Block 5 - Questions on dependent

Q17

After watching the video, please answer sincerely to the following questions:

"In my personal opinion I believe that..

This person appears to approach her job with professionalism and dedication

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q37

★

Given this person's track record, I see no reason to doubt her competence and preparation for the job

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q38

★

I can rely on this person to not make my job more difficult by careless work

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

### Fifth Page – Questions on dependent Variable (Bonding)

Q39

★

Please answer the following questions truthfully, accordingly to what the speaker of the video made you feel:

I feel we can have a sharing relationship where we can both freely share our ideas, feelings and hopes

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q40

★

I feel I can talk freely to this individual about the difficulties I am having and know that she will want to listen

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q41

★

I feel that if I shared my problems with this person, I know she would respond constructively and caringly

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

### Sixth Page - Question on Independent Variable (Type of Communication; Formal or Informal) & Attention Check



Block 4- Questions on Moderator

Q29 💡 ✖

Please answer sincerely to the following questions:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
The person on the video made the interaction very formal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attention check, please select 'Strongly agree'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Seventh Page – Questions on Moderator; Openness

Q30 💡 ✖

A short question about yourself. Please read carefully the following statements and answer truthfully:

"Generally,..."

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I see myself as someone who has few artistic interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I see myself as someone who has an active imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Eight Page - Demographics

Block 6 - Demographics

Q22 ✖

What is your gender

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Q23 ✖

What is your age?

Q24 ✖

What is your professional status?

- Intern
- Working student
- Working professional
- Unemployed

### Ninth Page – End of Survey

End of Survey

We thank you for your time spent taking this survey.

Your response has been recorded.

## Appendix 2 - SPSS Tables & Graphs:

### 1. Table A, Levene's Test

#### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: BONDING\_SCORE

F	df1	df2	Sig.
.390	9	111	.938

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + OPENESS\_SCORE + Q29\_1\_NEW + hand\_gest + Q29\_1\_NEW \* hand\_gest

### 2. Test of Between-Subjects / ANCOVA 2 WAYS:

#### Tests of Between-Subjects Effects

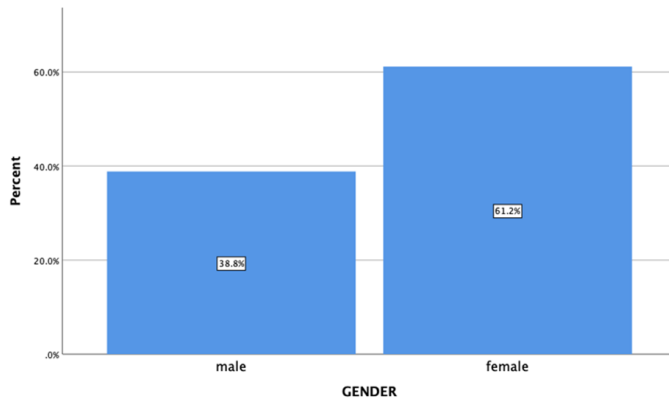
Dependent Variable: BONDING\_SCORE

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
--------	-------------------------	----	-------------	---	------

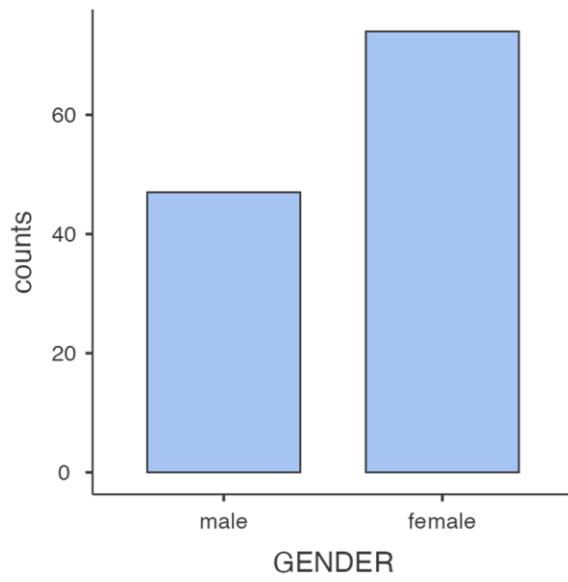
Corrected Model	13.865 <sup>a</sup>	10	1.386	2.136	.027
Intercept	52.551	1	52.551	80.945	.000
OPENESS_SCORE	1.772	1	1.772	2.730	.101
Q29_1_NEW	4.127	4	1.032	1.589	.182
hand_gest	1.758	1	1.758	2.709	.103
Q29_1_NEW * hand_gest	3.691	4	.923	1.421	.232
Error	71.414	110	.649		
Total	1982.806	121			
Corrected Total	85.279	120			

a. R Squared = .163 (Adjusted R Squared = .086)

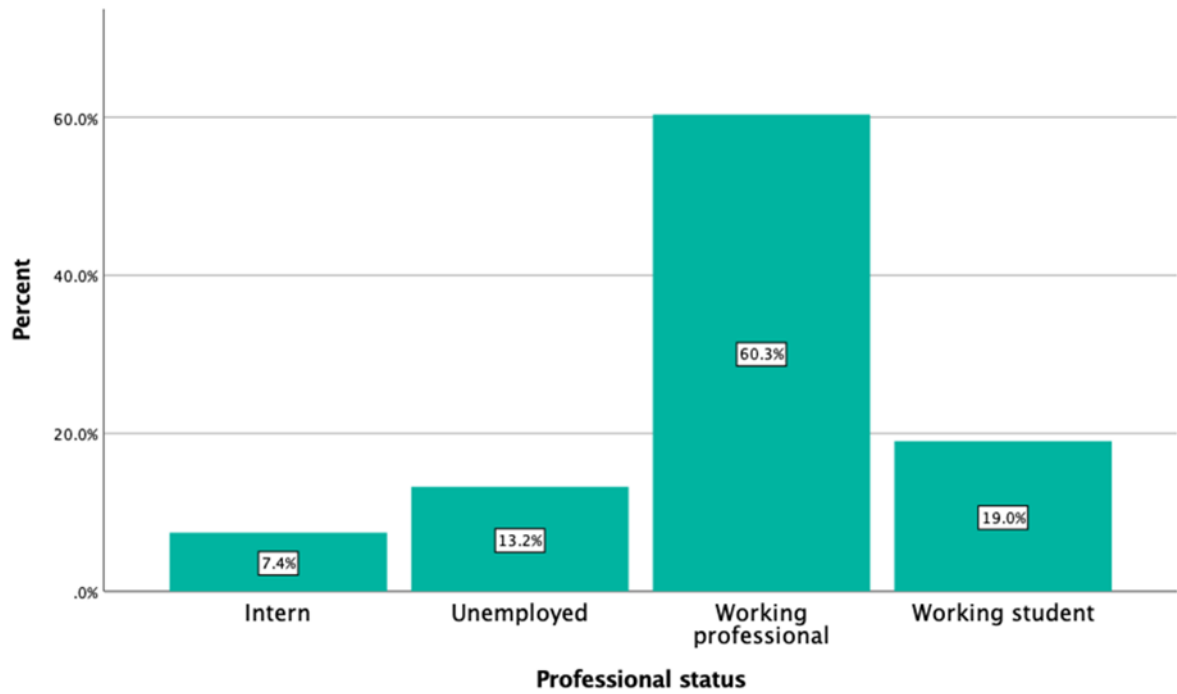
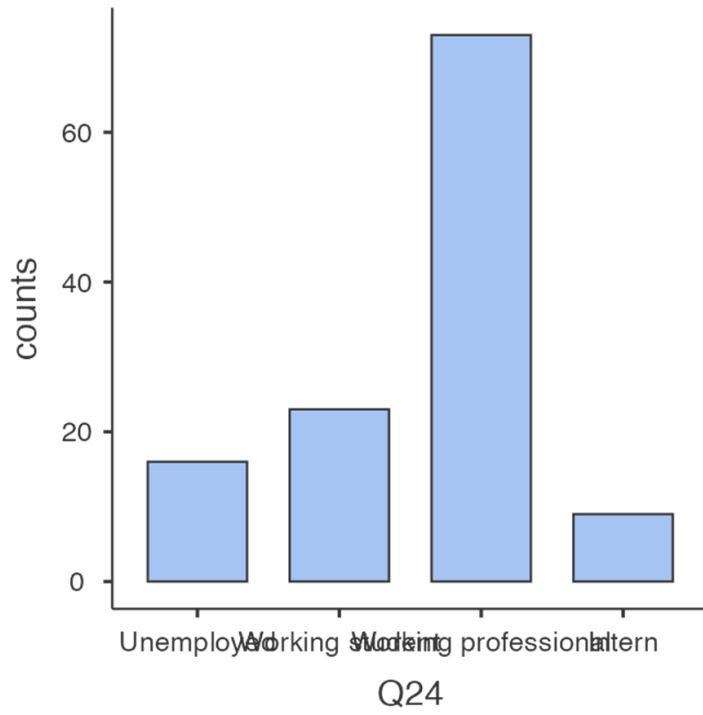
### ***3. Graphs Presenting the Percentages of the Data Collected, Categorized:***



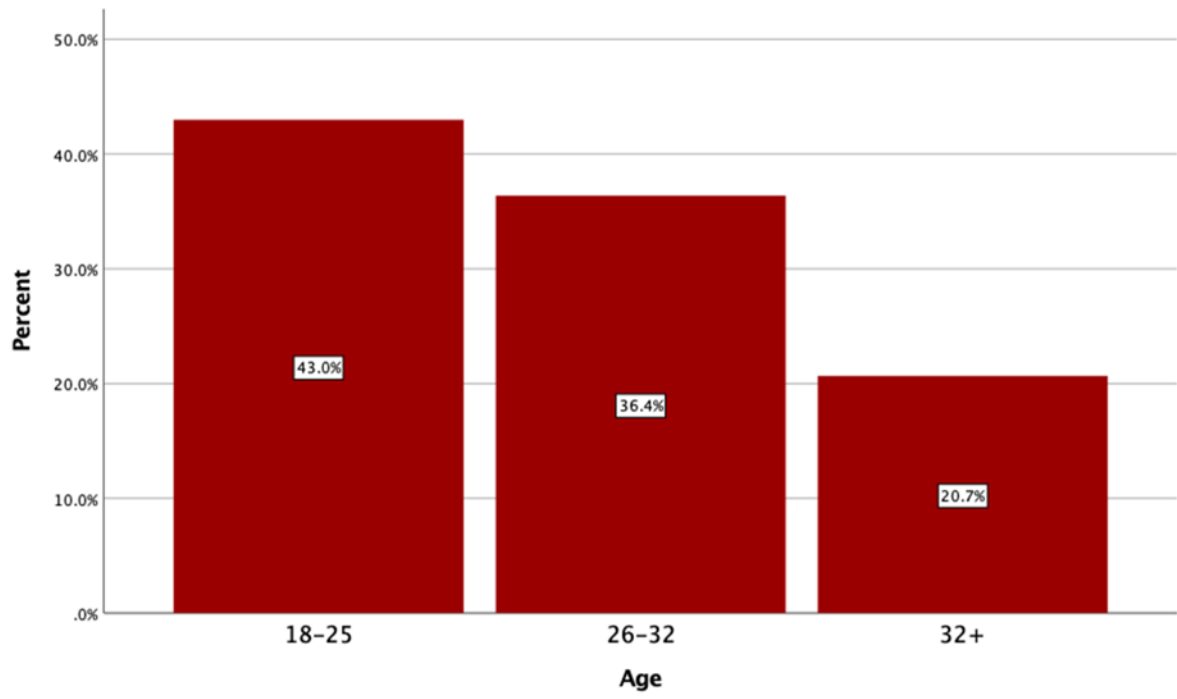
4.



**TABLE 1: GENDER**



**TABLE 2: PROFESSIONAL STATUS**



**TABLE 3: AGES**