

EXPLORING NEUROCOMMUNICATIVE CONFLUENCE: ANALYSIS OF THE INTERDEPENDENCE BETWEEN PERSONALITY TRAITS AND INFORMATION CONSUMPTION PATTERNS IN THE DETECTION OF FAKE NEWS. A STUDY WITH UNIVERSITY STUDENTS OF JOURNALISM AND COMMUNICATION USING ENNEAGRAMS

Exploring Neurocommunicative Confluence: Analysis of the Interdependence Between Personality Traits and Information Consumption Patterns in the Detection of Fake News. A Study with University Students of Journalism and Communication Using Enneagrams

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ABSTRACT

Introduction: The phenomenon of misinformation has generated increasing interest in various areas, including society, the media, and regulatory actions by entities such as the European Union. Fake news, also known as fake news, are transforming the media landscape, generating distrust in key communication players. This study focuses on determining the ability of university students in journalism and communication to detect misinformation on social media, specifically in tweets related to digital press.

Methodology: Objectives were established to analyze the detection capacity of misinformation in relation to different enneatypes and to evaluate the competencies of identifying fake news related to specific topics. A neurocommunicative approach was used to explore connections between personality traits and information consumption. The sample consisted of university students in journalism and communication.

Results: The study revealed that profiles 4 and 5 showed greater difficulty in detecting misinformation, while Achievers and Peacekeepers were more likely to identify it. Although the average accuracy rate was 59%, deficiencies in detection were observed in the Individualist and Researcher enneatypes. A direct relationship between enneatypes and correct responses was found, highlighting specific profiles in topics such as immigration, politics, health/COVID-19, and the Ukraine conflict. Achievers and Challengers showed greater willingness to fact-check information on health and armed conflicts. **Discussion and Conclusions:** The findings suggest that personality can influence the ability to detect misinformation, with some enneatypes showing greater susceptibility than others. These results have important implications for education in communication and journalism, highlighting the need to foster critical skills in students to address the phenomenon of misinformation in the digital environment.

Keywords: misinformation; enneatype; students; journalism; fake news.

RESUMEN

Introducción: El fenómeno de la desinformación ha generado un creciente interés en diversos ámbitos, incluyendo la sociedad, los medios de comunicación y las acciones regulatorias de entidades como la Unión Europea. Las noticias falsas, también conocidas como *fake news*, están transformando el panorama mediático, generando desconfianza en los principales actores de la comunicación. Este estudio se centra en determinar la capacidad de los estudiantes universitarios de periodismo y comunicación para detectar la desinformación en las redes sociales, específicamente en tweets relacionados con la prensa digital.

Metodología: Se establecieron objetivos para analizar la capacidad de detección de desinformación en relación con diferentes eneatis y evaluar las competencias de identificación de fake news relacionadas con temáticas específicas. Se utilizó un enfoque neurocomunicativo para explorar las conexiones entre rasgos de personalidad y el consumo de información. La muestra consistió en estudiantes universitarios de periodismo y comunicación. **Resultados:** El estudio reveló que los perfiles 4 y 5 mostraron una mayor dificultad para detectar desinformación, mientras que los Triunfadores y Pacificadores fueron más propensos a identificarla. Aunque la media de aciertos fue del 59%, se observaron deficiencias en la detección en los eneatis Individualista e Investigador. Se encontró una relación directa entre los eneatis y las respuestas correctas, destacando perfiles específicos en temáticas como inmigración, política, salud/COVID-19 y guerra de Ucrania. Los Triunfadores y Desafiadores mostraron mayor voluntad de contrastar la información en temas de salud y conflictos armados. **Discusión y Conclusiones:** Los

hallazgos sugieren que la personalidad puede influir en la capacidad de detectar desinformación, con algunos eneatis tipos mostrando una mayor susceptibilidad que otros. Estos resultados tienen implicaciones importantes para la educación en comunicación y periodismo, destacando la necesidad de fomentar habilidades críticas en los estudiantes para enfrentar el fenómeno de la desinformación en el entorno digital.

Palabras clave: desinformación; eneatis tipo; estudiantes; periodismo; noticias falsas; *fake news*.

1. INTRODUCTION

Although the phenomenon of disinformation cannot be attributed exclusively to a single cause and is not of recent appearance, society, the media and the European Union, through specific regulatory measures such as the Guiding Measure 2010/13/EU, have intensified their interest and concern in this regard. In this context, "non-news" or fake news, terms that will be explored in more detail in this paper, are leading journalism towards a different scenario from the current one, characterized by the proliferation of speculation. "For some, it will be its end, in the double sense of the word, since it will mean the death of current journalism to harbor a new communicative paradigm based on the creation and dissemination of fake news as a purpose" (Amorós, 2019, p. 21). In this sense, numerous studies report the distrust of society towards the main actors of social communication (Barrientos et al., 2022), encompassing media, journalists, communicators and social networks (Pérez-Escoda y Pedrero-Esteban, 2021, p. 80). This limitation in the credibility of the media is increased in the confluence with other elements: social networks and politicians (Aruguete et al., 2020), where a crisis of important depth for the backbone of our society such as freedom of expression in particular and democratic values in its broadest conception is glimpsed (Barrientos et al., 2018).

This vision not only warns of a polarized and easily manipulated society, with difficulties to assert critical thinking (Aruguete et al., 2020), but even accuses actions aimed at "curtailing a capital right, essential to make possible the plural flow of information that shapes free public opinion, an essential pillar of any democracy" (Sánchez-Beato, 2022, p. 99).

Pérez-Escoda and Pedrero-Esteban (2021, p. 80) even point out, in a study on media literacy for university students, that precisely the trust that this spectrum of the population places in the media is "inversely proportional to the consumption they make of them: they state that they hardly consume radio either on an analog receiver or on online devices, nor traditional press, and yet these are the media in which they place most trust". This study shows that they distrust social networks and streaming content while they consume them in a majority, while "only television and online press maintain similar levels of consumption and reliability" (Pérez-Escoda y Pedrero-Esteban, 2021, p. 80).

Precisely, the Digital News Report Spain 2022, in its analysis of the trust that consumers of information have in the news, shows two clear trends in Spain. On the one hand, according to the report, "the traditional distrust among younger users is worsening: more than half (51%) of those under 35 years of age do not trust the news compared to 21% who do". In addition, the study also warns of a certain disbelief among more advanced age groups that until 2021 were confident in journalistic information, since "among respondents aged 45 and 54, trust has plummeted nine percentage points and there is already a majority of those who do not trust (34%) compared to those who do (30%)" (Vara-Miguel et al., 2022, p. 34).

However, the phenomenon of disinformation is also conceived as the necessary facilitator for a new communicative paradigm that combats, precisely, disinformation, because "in reality, everything can be false except journalism" (Amorós, 2019, p. 21).

To better understand the context of disinformation, we should not lose sight of the confluence of different factors and circumstances that have greatly complexified the international communicative system. Traditional media

coexist with new media -native digital- and content platforms, leading to a fragmentation of audiences, a substantial increase in competitiveness and a displacement of communication professionals as the exclusive guardians of information. In this way, information and content that are not subject to any verification process make their way (González, 2019). This scenario has favored a process of "platformization" in which, according to the 2021 We are social report, "eight out of every ten Spaniards between 16 and 65 years of age already have at least one profile in one of these virtual spaces, which during 2020 [...] added eight million new users to reach the figure of 37 million".

As a sample, among the contributions of Lotero Echeverri et al. (2018), there is one that points to the global phenomenon of disinformation as a conditioning factor that "has had important effects on political campaigns such as the last US presidential elections, the Brexit victory and the referendum to approve the peace agreements between the Colombian government and the FARC guerrillas" (p. 298).

Precisely, some studies, both in the North American context (Tandoc et al., 2019) and in the Spanish context (Blanco-Herrero y Arcila-Calderón, 2019), point to social networks, the political class and the new modes of spontaneous communication as co-responsible for the proliferation of fake news or non-news. Under that same premise, some of the big technological companies, such as Facebook, Twitter or Google, for example, "have served as a platform for the dissemination of false and malicious news and have responded late and at a pace forced by the pressure of advertisers and by legal demands for rectification and right to oblivion" (Lotero et al., 2018, p. 297).

The social network Whatsapp, according to the study of the impact of fake news on students of Journalism and Audiovisual Communication of the Carlos III University of Madrid, (Herrero y González, 2022) is the social network through which most of the disinformation is accessed, followed by Facebook and Twitter, since "social networks are the platforms where young people spend more hours and this massive exposure to networks would explain why they are also the channels from where they receive more hoaxes or disinformation" (p. 17). In addition, and in parallel, "access to information has grown exponentially", which has also contributed to the strengthening of disinformation" (Ortiz y Martín, 2019). In this regard, it should be noted that in the aforementioned study, whose sample consisted of students of Journalism and Communication, "29% claim not to distinguish a real news from a false one", something that becomes especially relevant given that they are precisely future information/communication professionals, and "will be responsible for creating and sharing information and also reveals that teacher training remains a key challenge in the process of media literacy" (Herrero y González, 2022, p. 17).

When the term disinformation is used as a generic concept that encompasses information - understood as "the final product of communication, which is the result of the progressive sum of all the elements in communicative function, and which alters its quantity and quality itself" (Aladro, 1999, p. 30) - that is untruthful, the term disinformation is used as a generic concept that encompasses untruthful information. 30)- not truthful, it is worth referring to the work of researchers Wardle and Derakhshan (2017) who, among others (Basson, 2017; Wardle, 2017; or Ireton y Posetti, 2018), qualify the term fake news, understanding it as not suitable to describe disinformation or information pollution. Thus, they describe the phenomenon in a deeper and more detailed way:

- Disinformation: false, misleading or inaccurate information that is created or shared with the purpose of harming a person, a social group, an organization or company, a country, etc.
- Misinformation: false, misleading or inaccurate information that is created or shared, but without the intention of causing harm or damage to someone.
- Misinformation: real information that is created or shared with the aim of harming a person, a social group, an organization or company, a country, etc. In this category would be hate speech, cyberbullying and leaks (p. 5).

In this sense, the potential of disinformation, misinformation or misinformation to threaten the very meaning of journalism is incalculable, especially in convulsive or crisis contexts (Boulianne y Theocharis, 2020), "since it hinders the processes of carrying out this work and because it reduces the potential impact of such work, given that

investigations and journalistic notes circulate along with numerous disinformative messages" (Galarza Molina, 2022, p. 766). A situation whose impact increases after the COVID-19 pandemic crisis, when interest in political topics increases, according to the study by Pérez-Escoda and Pedrero-Esteban (2021), and where "practically three quarters of the sample show a high or very high interest, followed by humor. Regarding fake news, only half of the respondents declare to distinguish them, although 97% of them affirm that they receive them" (p. 80).

Therefore, it seems to be proven that disinformation, misinformation or misinformation generate an impact in the emotional field, relegating the concept of truthfulness and rational discourse to a second level of understanding, favoring the proliferation of extremism and informative manipulations (García, 2020, p. 29). However, as revealed by the work of Casero-Ripollés et al. (2023), the phenomenon of disinformation has less impact than expected on the possibility of changing the direction of the vote, from which it can be deduced that "citizens are becoming increasingly accustomed to living in a context characterized by the presence of information disorders and are beginning to develop defense mechanisms against them" or, on the contrary, it could have a more dangerous effect than the previous one, which has to do with the fact that many citizens "are not aware that they are consuming false news and that it shapes their attitudes. Therefore, they do not identify them as an element capable of conditioning their opinions and their electoral behavior" (p. 16). This same study also has an impact on socio-demographic and political factors, concluding that gender, age, education and ideology have a direct impact on the way in which we process news, such that "women, older people, the less educated and those on the extreme left are the ones who show higher levels of distrust and criticism of the different formulas for combating fake news" (p. 17). At the same time, the research refers to the fact that "men, young people and people on the extreme right are the ones who perceive the consequences of hoaxes with the greatest intensity" (p. 2).

There is also apparent unanimity in the fact that disinformation has a special impact on the younger public, precisely because this is the demographic segment with the highest consumption of social networks as a priority means of access to current affairs. (Mendiguren et al., 2020).

If the Gartner report (2017) already foresaw an increase in the consumption of disinformation, misinformation or misinformation as opposed to truthful information by the majority of citizens in developed countries by 2022, Rodríguez-Pérez and Canel (2022) also appealed in 2022 to the concept of information resilience associated with countries, "as an intangible resource of a country that measures the capacity of its citizens to deploy cognitive competencies to discern the veracity or falsity of the information, and to be aware of the scope of the problem" (p. 862).

Another aspect of relevance in the phenomenon of misinformation is the source or provenance of the data and, in this sense, Gamir and Lava (2022) associate hoaxes with anonymous sources, since "lack of attribution was the majority in all hoaxes constructed through exaggeration, decontextualization and deception; while supplanted sources were the majority in humorous hoaxes" (p. 785).

In this context, the verification of data has been consolidated as an indispensable procedure for the correct exercise of informative work, so that "today journalistic quality cannot be understood without adding to this concept those of transparency and innovation" (Rúas y Paniagua, 2023, p. 5).

To delimit this concept, numerous attempts can be found from different sources -academic, essayistic, informative, or even the product of professional practice itself-. Among them, the American Press Institute, through Jane Elizabeth (2014) already pointed to fact-checking as a tool that sought to increase knowledge, on the prior premise of the exercise of an exhaustive investigation in relation to what was declared and published in the media by people whose words "have an impact on the lives of others" to, subsequently, disseminate the information gathered. Thus, "fact-checkers investigate true facts and their work is free of partisan intentions or the defense of certain interests". However, some authors (Pérez-Escoda y Pedrero-Esteban, 2021; López y Rodríguez-Rodríguez, 2020) agree in warning that fact-checking cannot yet be considered a completely effective solution to the challenge of misinformation, given the scarce knowledge that citizens still have about these techniques. This does not detract either from the efforts made by some traditional and digital native media to incorporate the so-called verification

journalism in all their news processes, providing specific departmental units with budgets for this purpose. Examples include the Spanish case of Newtral, the North American New York Times Fact Checks and CNN Fact First, or El Polígrafo in Chile, among other cases (Pérez-Escobar y Varona, 2022); but these authors also highlight the newsrooms that devote their efforts exclusively to reporting hoaxes, inaccurate information or false information such as, for example, "Maldito Bulo in Spain, PolitiFact in the United States, GhanaFact in Africa or Pagella Politica in Italy, among others" (p. 136).

On the same thesis put forward by Wardle and Derakhshan (2017) in relation to the nuance and development of the concept of disinformation - towards misinformation or misinformation -, fake news coexist with others with whom they share inaccuracy and sensationalism. These are junk news, which necessarily involve false information but do provide a partisan, exaggerated or poorly adjusted to reality view, and also include aesthetics mimetic to those of real and truthful news (García-Marín y Salvat-Martinrey, 2021).

For all these reasons, it is essential to deepen initiatives that contribute to the generalized knowledge of verification techniques, as well as platforms specialized in the dismantling of hoaxes and inaccurate or sweetened information. All this, with special attention to students, in the different cycles of the academic curriculum, a segment especially vulnerable to disinformation. In this regard, some authors point out the need to convey to students the differences between "agreeing with the arguments and the credibility of the information" (Castells et al., 2022, p. 306), as well as "that the degree of agreement must be justified by valid evidence, while the degree of credibility must be justified by criteria such as the source, alternative opinions, etc.". Others (García-Marín, 2021), support the inclusion of subjects that deal with disinformation in its broadest sense, while "delving into its causes and consequences and delving into the verification of facts and data and the teaching of other specific tools to combat fake news" (p. 52), because today's students, "if they search, research, analyze and disseminate carefully in the look of online information sources available to them, they can become their own information verifiers" (Green et al., 2019, p. 200).

The inclusion of this type of subjects in the academic curriculum integrates the competence of the development of the critical spirit from the own construction of discourse and the analysis of other people's narratives, because "it is evident that the creation of digital narratives favors the acquisition by students of fundamental competences in their training." (Fernandez et al, 2022, p. 73). It should also be taken into account that the decoding of discourse automates learned processes -of a neurocommunicative nature- that favor the interpretation of messages to be carried out in a more instinctive than conscious way (Vargas y Sacaluga, 2021).

2. OBJECTIVES

This study aims to determine the ability of university students of journalism and communication degrees to detect misinformation in social networks, specifically through tweets linked to the digital press, or that have links to these news, to observe how it affects their enneatype in relation to the ability to identify this information pollution. For this purpose, the following objectives are established:

- O1. To analyze the general disposition to detect disinformation in relation to the different existing enneatypes.
- O2. To evaluate the competences of identification of disinformation related to the main topics in which a greater number of fake news is observed, and the differences that the enneatypes have when detecting them.

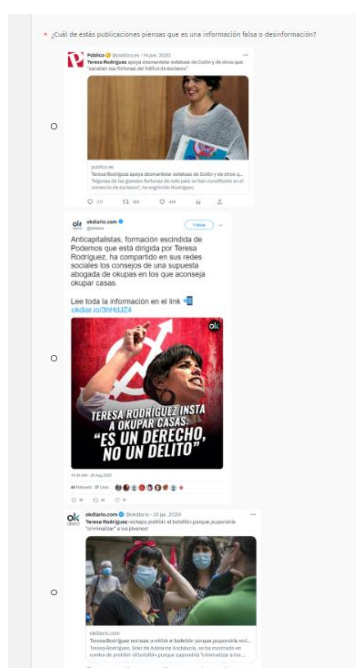
3. METHODOLOGY

This research is based on a primarily quantitative methodology, through a survey with specific answers. The sample is made up of students in their final years of the Communication and Journalism degrees at the European University of Madrid, students who are presumed to have a special sensitivity to detect disinformation. For a total of 210 students, it was determined that the sample should be at least 137 students in order to have a confidence level

greater than 95% and a margin of error equal to or less than 5%. In the end, 144 people completed the survey, so the final sample is greater than the minimum necessary.

The test included three sections. The first to define socially and demographically the users under study. In this first block, in addition to sex, age, demographic environment of residence, the affinity or political ideology with which they felt most represented among the six broadest possible alternatives (progressive, liberal, conservative, communist, anarchist, or pro-independence/nationalist) was also requested. The second, and through a short questionnaire with two questions and three possible answers, to determine the enneatype of each user. And finally a third section of 16 questions, with three options each, where the student had to detect which was the news that could be considered disinformation, being two true and one false news about the same fact, as can be seen in the following figure.

Figure 1. Example presentation of Twitter links news from the questionnaire to select the false one.



Source: Elaborated by the authors.

This last section was divided into four thematic blocks, each consisting of four questions, selected under the criterion of the highest apparent incidence of misinformation, such as: immigration, politics, health and sanitation, and the war in Ukraine. In all cases, and especially in the political block, special care has been taken in the selection in order to have a sufficiently broad sample to encompass the entire political-ideological spectrum ascribed to national politics in Spain. Likewise, in the rest of the blocks, attention has been paid to diversify as much as possible the different real and informative contamination approaches when preparing the test, so that the sample is not altered by ideological approaches but exclusively by enneatypes.

Table 1. Dimension of the questionnaire

Dimensions	Items
Demographic block	5
Enneatype block	2
Disinformation block	16

Source: Elaborated by the authors.

The analysis and classification in this study, conducted between February and March 2023, was based on a representative sample of 144 users, generating more than 3.744 distinct study units or responses. All responses were thoroughly analyzed and categorized for study. The implementation of the test was carried out using the QuestionPro platform through computer equipment, conducting six specific sessions with different groups of approximately twenty students in each of them in a classroom under the supervision of the research team. The validity and reliability of the results were verified by applying the Chi2 methodology, with a margin of error significantly lower than 5% and a confidence level of 95%. The results obtained showed a value well below the critical threshold, almost reaching a result of 0, which reinforces the robustness and accuracy of the analysis from an academic and scientific perspective.

Enneagram research is conducted from the perspective of human behavior at the level of personality traits and tendencies, in order to locate more effective points of connection. Its purpose is to understand holistically the management of intrapersonal and interpersonal emotional intelligence, and to be able to apply them empirically to environments of transpersonal and psychological impact (cognitive, emotional and behavioral) such as the perceptual and interpretative management of fake news.

Here are several reasons why the enneagram may be useful in this context:

Understanding neuropsychology: The enneagram provides a framework for understanding an individual's personality and emotional inclinations. It is based on nine different personality types, known as enneatypes, which represent patterns of thinking, feeling and behaving. By identifying a person's enneatype, insights can be gained into their characteristics, motivations, and emotional reactions, which can be useful in understanding how they interpret reality and react to fake news (Ramírez, 2018).

- Identify psychological taxonomy responses: Each enneatype is associated with specific psychological and emotional responses. By studying the different enneatypes and their response patterns, you can gain a deeper understanding of the different ways people perceive, interpret and react to information, including fake news. This can be valuable in analyzing how certain enneatypes may be more prone to manipulation or how they may process and evaluate the veracity of information.
- Behavioral and perceptual styles: The enneagram can also provide information about people's behavioral and perceptual styles. Each enneatype tends to have certain characteristics and behavioral patterns, as well as perceptual preferences. By understanding these styles, one can explore how they influence the way people relate to information and how they can be influenced by fake news (Castro et al., 2019).
- Emotional intelligence management: The enneagram is used to understand and manage intrapersonal and interpersonal emotional intelligence. This involves developing skills to recognize and regulate one's own emotions and understand the emotions of others. In the context of fake news, emotional intelligence management can help people become more aware of their own emotional reactions and more critically evaluate information before sharing or believing it (Ramírez, 2018).
- Transpersonal and psychological impact: Enneagram research seeks to apply empirical insights to transpersonal and psychological impact settings, such as the management of fake news. By understanding how people perceive and interpret information, work can be done to improve media literacy, promote critical thinking, and reduce the spread of misinformation.

The enneagram can be a methodologically interesting tool for research on the management of emotional intelligence and the interpretation of information, including fake news. It provides a framework for understanding the human psyche, identifying specific psychological responses, analyzing behavioral and perceptual styles, and promoting emotional intelligence management. All of this can contribute to a deeper

understanding of how people perceive, interpret and react to fake news, and potentially help address the challenges associated with misinformation.

The enneagram is a psychological tool designed to understand the human psyche, to glimpse an individual's neuropersonality, and the emotional inclinations that condition their life, to maximize their human impact and potential (Ramírez, 2018).

Furthermore, according to the etymology of the word, the enneagram is of Greek origin. The term is composed of two words: "*enea*, meaning nine, and *grass*, meaning figure", that is, plot of nine points" (Vargas, 2015).

Each geographical point, provided by the enneagram lay-out, corresponds to a personality type also accredited as the enneatype, and is used to identify, level and understand the different psychological taxonomy responses of certain profiles of subjects (Castro, 2019). And to be able to inquire into scenarios of restlessness and perceptual ambiguity, such as the discernment and impact of fake news. It can also serve as a reference of intra-emotional and inter-emotional tendencies, on derivatives, reactions and interpretations of reality, being also useful to apply behavioral and perceptual styles.

3.1. Enneatypes and neuroscience

3.1.1. Neuroperfectionist: Enneatype 1

This personality trait is determined by the firmness of a thought as a form of action. They tend to be withdrawn and instinctive, perhaps characterized by a difficult childhood and a confused attachment figure. Discipline and diligence in performing tasks are their main strengths. Paradoxically, their weakness lies in their high vindictiveness, which can lead to irritability and frustration. Their ability to perceive and interpret a disturbing reality can converge in the generation of emotions of insecurity, anger and frustration.

3.1.2. Neurohelper: Enneatype 2

An essential characteristic of this type is the ability to develop empathy for others, which translates into high interpersonal intelligence, as well as the generous faculty of being helpful and helpful. Their greatest strength in teamwork lies in their collaborative spirit. Their weakness remains in that they can take on challenges, and persuade others to feel the thrill of helpfulness (Riso, 1993). Their ability to perceive and interpret unsettling reality can converge in generating emotional tendencies of compassion and trust.

3.1.3. Neuroachiever: Enneatype 3

Their attribute is to seek success in teamwork, so they seek the approval of the team through competent operational work. From the planet of doing the constant search for success and ambition becomes an insatiable fuel for the ego (Vargas, 2015). Their ability to perceive and interpret the disturbing reality can converge in the generation of emotional tendencies can lead to the generation of emotions of determination and certain emotional myopia.

3.1.4. Neuromelancholic: Enneatype 4

This enneagram type is likely to be romantic and sensitive, perfect for teamwork to solve social problems and support social needs. They handle themselves well if they need to generate ideas about aesthetics, beauty and art, and become a great potential job opportunity. Their greatest emotional exhaustion lies in the fear of being rejected (Beesing, 1992). Their ability to perceive and interpret disturbing reality may converge in generating emotional tendencies of harmony and equanimity.

3.1.5. Neuroinquirer: Enneatype 5

Analytical commitment is the neuroinquirer's most important contribution to the team. It is an enneagram profile with vital curiosity, inquisitive, autonomous and with some doses of antisocial by nature. Their main disadvantage is the inability to fit into a group, as they often feel that their space and your work are conquered by other members of the group (Beesing, 1992). Their ability to perceive and interpret disturbing reality may converge in generating transpersonal emotional tendencies and beginner's mind.

3.1.6. Neuroloyal: Enneatype 6

Their teamwork is based on loyalty to challenges and objectives, they show respect for responsibility and can perform with absolute discretion. The neuroloyal profile are subjects you can trust. Their vital disadvantage may be found in the fear of not being rewarded, or recognized, for loyalty (Vargas, 2015). Their ability to perceive and interpret unsettling reality may converge in generating tendencies emotions of self-esteem and security.

3.1.7. Neuroenthusiast: Enneatype 7

This personality brings brilliant insights to the perception and interpretation of reality. They have a natural inclination to cooperate, and are an enneagram determined to explore new scenarios by cultivating intra-emotional energetic vitality. Fear of pain prevents them from participating fully and confidently in new challenges (Vargas, 2015). Their ability to perceive and interpret unsettling reality can converge in generating emotional tendencies of illusion and causeless vital energy.

3.1.8. Neuroleader: Enneatype 8

They are defined by the ability to persuade others through communication. They have an expansive capacity to manage their environment. The neuroleader has very high levels of intrapersonal emotional intelligence, which is projected in high skills to delegate challenges and share responsibility. They may have emotional inclinations to perceive and interpret unsettling reality that can result in some behavioral aggressiveness and low beginner's mind.

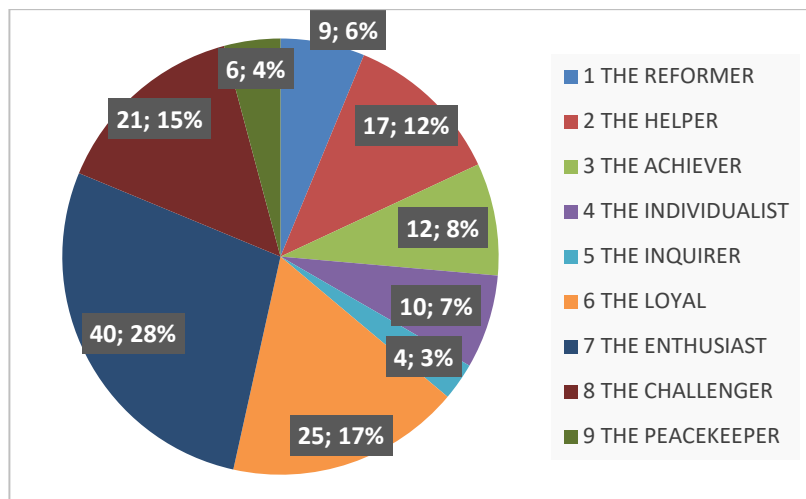
3.1.9. Neuromediator: Enneatype 9

Their personality morphology is defined by a high capacity to validate and authorize the ideas of others. They have an expansive capacity to neutralize passion in perceiving and interpreting reality. Their main preeminence lies in the exploration of concord and harmony. They can deform their potential base in disadvantage when they try to obviate the conflicts and mainly tends to cover them up. They perceptually show a tendency to interpret the disturbing reality that can lead to some emotional procrastination, and an emotional tendency to postpone emotions and / or decisions.

4. RESULTS

Out of the 144 people who completed the survey, there is a high percentage (28%) whose profiles can be identified with the Enthusiast enneatype, followed by the Loyal (17%) and Challenger (15%) profiles, as can be seen in the following figure, which shows the number of users identified with each enneatype and their percentage.

Figure 2. Number and percentage of enneatypes identified in the study.



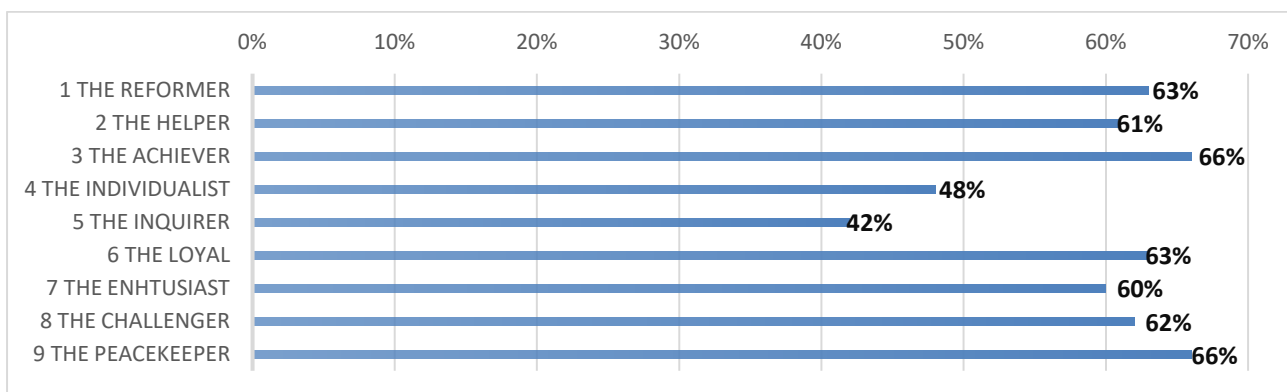
Source: Elaborated by the authors.

On the other hand, the enneatypes that have been identified with a smaller number of users have been the Reformer, the Individualist, the Inquirer, and the Peacekeeper, which together account for only 20% of the students who have carried out the study.

The sample is diverse in relation to the 9 existing enneatypes, although 60% of the users identified themselves with enneatypes 6, 7 and 8, that is, the Loyal one, the Enthusiast one -almost one out of every three students has a profile that coincides with this one-, and the Challenger one.

The average score among the nine enneatypes identified was 59% in general, with most of the profiles above 60%. The lack of success in detecting disinformation in enneatypes 4 and 5 corresponding to the Individualist and the Researcher is striking, as can be seen in the following figure.

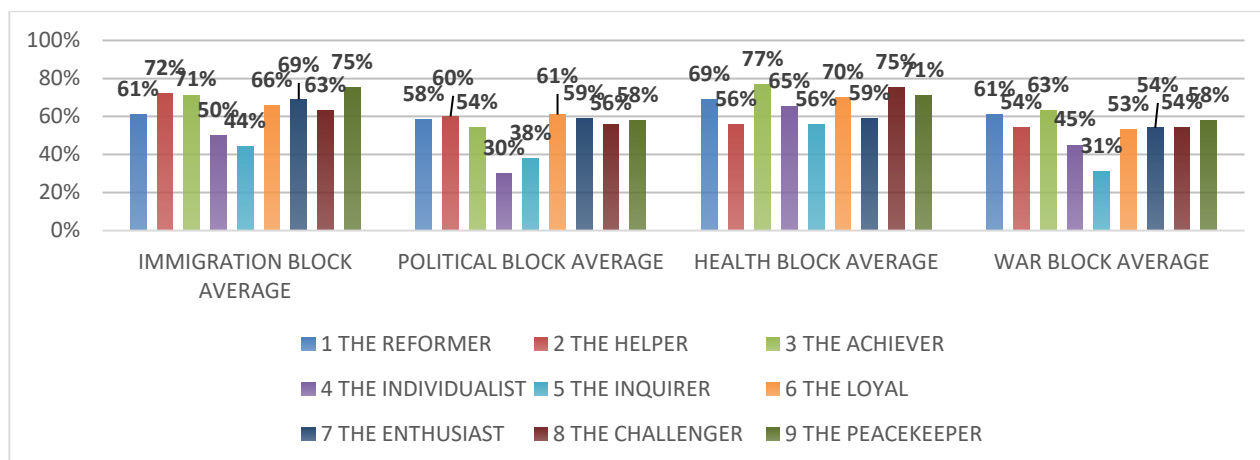
Figure 3. Percentage of overall success according to enneatype.



Source: Elaborated by the authors.

On the other hand, clearer differences are observed when the different enneatypes are analyzed with the thematic blocks, as shown in the following figure.

Figure 4. Percentage of correct answers according to enneatype and thematic block.



Source: Elaborated by the authors.

It can also be seen that the Helper profile stands out for its ability to detect misinformation in the immigration block, as does the Peacekeeper in the health block. With similar results is the Achiever, also in these two sections of immigration and health, which, together with enneatype 6, is above 70% correct.

The profiles of the Individualist and the Researcher in most of the blocks are well below the rest of the enneatypes, although in the health block there is a considerable improvement in their results.

On the other hand, the Loyal profile only stands out above the rest in the political block, and obtains a good result in health. The Reformer is an enneatype positioned at an intermediate point of success in relation to all the blocks, and only stands out above the rest of the profiles in the Ukrainian war block, together with the Achiever.

Of all the students who took the survey, only 1 managed to correctly answer the 16 disinformation questions, whose profile corresponds to the Peacekeeper enneatype. Consequently, 24 students out of a total of 144 managed to position their correct rate above 80%, with the Enthusiast (n=7), the Loyal (n=6) and the Challenger (n=6) profiles being the ones that responded with the highest correct rate. The Enthusiast (n=7) and the Individualist (n=5) stand out as the enneatypes with the highest error rate when identifying fake news, with a rate of less than 38% of correct answers, although the probabilistic factor of the Enthusiast profile should be taken into account as it is the majority enneatype. On the other hand, the case of users identified with Individualist enneatype 4 is particularly noteworthy, as half of them obtained a negative score.

In the research carried out using the QuestionPro platform, a statistical test was applied to analyze the results obtained. For this, the statistician's methodology was used and the Chi-square test (Chi²) was performed.

The Chi-square test, also known as test of independence or goodness-of-fit test, is a statistical technique used to determine whether there is a significant relationship between two categorical variables. In this case, it was used to analyze the relationship between the variables investigated in the study.

To verify the validity of the results obtained, an additional verification was carried out using the Chi² methodology. This methodology evaluates whether the results obtained differ significantly from the values expected under the null hypothesis of no relationship between the variables. By establishing a margin of error of less than 5% and a confidence level of 95%, the aim is to ensure that any differences observed in the data are statistically significant and not simply due to chance.

5. DISCUSSION AND CONCLUSIONS

From the results obtained we can conclude that the ability to identify disinformation is influenced by the interdependence of the enneatype that observes it. Thus, enneatypes 4 and 5 have a general predisposition to encounter greater difficulty in identifying this type of information, while, on the contrary, the enneatypes most likely to detect information pollution are the Achiever and the Peacekeeper.

A high percentage of students identify with the Enthusiast, Loyal and Challenger enneatypes. In contrast, the Reformer, Individualist, Inquirer and Peacekeeper enneatypes were identified to a lesser extent.

Overall, students had an average accuracy rate of 59% in detecting misinformation in the nine identified enneatypes, but there was a lack of accuracy in detecting misinformation in the Individualist and Inquirer enneatypes.

Regarding the relationship between the different thematic blocks, there is a direct relationship between the enneatypes and the correct answers. As a sample, the Peacekeeper, the Helper and the Achiever stand out strongly in the immigration block. These profiles have a greater emotional impact on the perception of the informative reality. As for the political block, the two profiles that stand out in the detection of disinformation are the Loyalist and, again, the Helper, in both cases the ability to work in a team and, in the former, the need for recognition, may make them more aware of political fake news, since they tend to be people who are more dependent on social or political organizations. Almost all the enneatypes have a high degree of detection of disinformation in the area of health and COVID-19, with the profile of the Achiever and the Challenger standing out above all, to whom a greater willingness to contrast and deepen is detected. Finally, in the Ukrainian war block, the Achiever stands out again, but also the Reformer, both of whom have a high power of vindictiveness and special sensitivity to identify false news about armed conflicts.

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