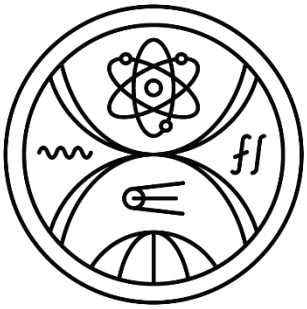
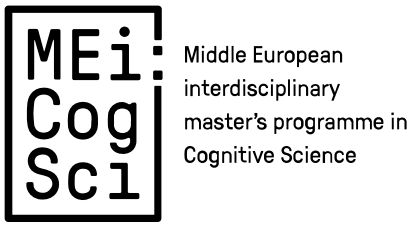
UNIVERSITY OF COMENIUS IN BRATISLAVA

FACULTY OF MATHEMATICS, PHYSICS AND INFORMATICS

PHENOMENON OF PARASOCIAL INTERACTION AS THE MAIN ELEMENT OF STEREOTYPICAL BEHAVIOUR AND ITS INFLUENCE ON THEORY OF MIND IN INDIVIDUALS WITH AUTISM SPECTRUM DISORDERS

Master's Thesis





2023 Bc. Veronika Mattová

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Master's Thesis

Study Programme: Cognitive Science

Field of Study: Computer Science

Department: Department of Applied Informatics

Supervisor: prof. MUDr. Daniela Ostatníková, PhD

Bratislava 2023 Bc. Veronika Mattová

Comenius University Bratislava
Faculty of Mathematics, Physics and Informatics

THESIS ASSIGNMENT

Name and Surname:	Bc. Veronika Mattová
Study programme:	Cognitive Science (Single degree study, master II. deg., full time form)
Field of Study:	Computer Science
Type of Thesis:	Diploma Thesis
Language of Thesis:	English
Secondary language:	Slovak

Title: Phenomenon of Parasocial Interaction as the Main Element of Stereotypical Behaviour and its Influence on Theory of Mind in Individuals with Autism Spectrum Disorders

Annotation: Despite the fact that we have recently sought a holistic view of individuals with autism spectrum disorders (ASD) and linked it to innovative approaches with multiple therapies, in order to support their cognitive abilities associated with the theory of mind (ToM), we are still trying to find a way that would provide them with the most effective support in their individual development. The phenomenon of parasocial interaction (PSI) seems to be the optimal path, to enter their imaginary world of fantasy, with the possibility, which can be used in favour of real situational episodes.

Aim: Explore, if there is an association between the influence of PSI in individuals with ASD and their deficits, related to empathy and ToM.

Literature:
Visuri I. (2020). A Room of One's Own: Autistic Imagination as a Stage for Parasocial Interaction and Social Learning. Journal for the Cognitive Science of Religion, 5(1), 100–124.
El Kaddouri et al. (2020). Measuring spontaneous mentalizing with a ball detection task: putting the attention-check hypothesis by Phillips and colleagues (2015) to the test. Psychological Research, 84(6), 1749-1757
Gleason T.R., Theran S.A., Newberg E.M. (2017). Parasocial Interactions and Relationships in Early Adolescence," Frontiers in Psychology.

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Assigned:	19.04.2022
Approved:	28.04.2022

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ZADANIE ZÁVEREČNEJ PRÁCE

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Študijný odbor: informatika
Typ záverečnej práce: diplomová
Jazyk záverečnej práce: anglický
Sekundárny jazyk: slovenský

Názov: Phenomenon of Parasocial Interaction as the Main Element of Stereotypical Behaviour and its Influence on Theory of Mind in Individuals with Autism Spectrum Disorders
Fenomén parasociálnej interakcie ako hlavný element stereotypného správania a jej vplyv na teóriu mysle u jedincov s poruchami autistického spektra

Anotácia: Napriek snahe o holistický náhľad na jedincov s poruchami autistického spektra (PAS) a prepájame ho s inovatívnymi prístupmi rôznych terapií, s cieľom podpory ich kognitívnych schopností, naviazaných na teóriou mysle (ToM), stále sa pokúšame nájsť spôsob, ktorý by im poskytol čo najefektívnejšiu podporu pri ich individuálnom rozvoji. Fenomén parasociálnej interakcie (PSI), sa javí ako optimálna cesta, v rámci preniknutia do ich imaginárneho sveta fantázie, za využitia danej možnosti, v prospech reálnych situačných epizód.

Cieľ: Zistiť, či existuje asociácia medzi vplyvom PSI na jednotlivcov s poruchami PAS, a rozvojom ich deficitov, prepojených s empatiou a ToM.

Literatúra:
Visuri I. (2020). A Room of One's Own: Autistic Imagination as a Stage for Parasocial Interaction and Social Learning. Journal for the Cognitive Science of Religion, 5(1), 100–124.
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Vedúci: prof. MUDr. Daniela Ostatníková, PhD.
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Dátum zadania: 19.04.2022

Dátum schválenia: 28.04.2022

prof. Ing. Igor Farkaš, Dr.
garant študijného programu

.....
študent

.....
vedúci práce

Declaration of Honour

I pledge that I have written this Master Thesis myself, on my own. I have not employed any other sources than those mentioned in the text and its references.

Bratislava, May 2023 .....

Acknowledgement

I would like to thank my supervisor, Prof. MUDr. Daniela Ostatníková and consultants Mgr. Hana Celušáková, PhD., Mgr. Katarína Polónyiová and RNDr. Jaroslava Babková, PhD. from ACVA/ARCA for their help and guidance with work on this thesis. In addition, I would also like to thank Raimund Bühler, BSc., MSc., from Giorgia Silani's Lab and Mgr. Jakub Šrol, PhD., from Centre of Social and Psychological Sciences SAS for the support and valuable advice within the empirical part. Moreover, Mgr. Matej Kucek and Mgr. Olívia Hurbanová from HighBrõws: Science-based educational and problem-solving agency, provided me with crucial insights, regarding the chosen topic in the field of the virtual environment, for which I am more than grateful, along with the help and support, regarding the participants of this study dedicated to PaedDr. Elena Mendelová, CSc., as well as to Ing. Katarína Gronová. And last but not least, I would like to show my sincere gratitude towards Ingela Visuri, PhD. from Dalarna University, for providing me with her research paper, which has inspired me to dive into the research of this kind, as well as everyone else involved in the presented research.

Abstract

"*Save me*" is a repeated saying of individuals asking for help, but how can anybody hear, when no one is around? In this particular case, the support of parasocial interaction is needed to be taken into account. Thus, we continue to look for ways to support individuals with an autism spectrum disorder in their individual development, in order to promote their theory of mind and empathy-related cognitive abilities, despite the holistic view of individuals with autism spectrum disorder linked to novel approaches with numerous therapies. Consequently, the phenomena of parasocial interaction appear to be the most convenient way for people to access their fantasy world and offer the chance to influence actual situational experiences while feeling safe and content. The aim of this work is to detect, whether there is an association between the influence of parasocial interaction on these individuals and their capacity to acquire specific abilities relevant to empathy, as well as to the theory of mind. Thus, in order to maintain a comprehensive view of the aforementioned endeavours, four different types of questionnaires (Autism Spectrum Quotient Test, Empathy Quotient, Reading the Mind in the Eyes Test, and Parasocial Interaction Questionnaire) were administrated, along with the second part, obtaining saliva samples. The results of our work significantly point to the beneficial effect of such interactions, created on the basis of various impulses, starting with experiencing similar hardships and looking for the aforementioned help, or another possibility hidden in admiration/identification with a character for endurance or bravery. That is why it is possible to count on the influence of parasocial interactions, as a significant part of the life of many individuals with the potential of additional care, through imagination, in the representation of their own mentors.

Keywords: autism spectrum disorder, parasocial interaction, empathy, theory of mind, imagination, fantasy

Abstrakt

"*Zachráň ma*" je opakované zvolanie jednotlivcov, ktorí žiadajú o pomoc, ale ako je možné vypočuť ich, ak nie je nik na blízku? V tomto konkrétnom prípade je potrebné vziať do úvahy podporu parasociálnej interakcie, ktorú možno prepojiť s neustálym hľadaním spôsobov, ako podporiť jednotlivcov s poruchou autistického spektra, v ich rozvoji, individuálnych kognitívnych schopností, súvisiacich s empatiou, či teóriou mysle, a to aj napriek súčasnému holistickému pohľadu na jednotlivcov s poruchou autistického spektra, oplývajúceho novými prístupmi, v kombinácii s rôznymi terapiami. V dôsledku toho, sa javy parasociálnej interakcie javia, ako najrelevantnejší spôsob, ktorý poskytuje prienik do sveta fantázie, s možnosťou ovplyvniť reálne životné situácie, zatiaľ, čo je neustále zachované bezpečie a vnútorná vyrovnanosť jednotlivca. Cieľom tejto práce je zistiť, či existuje súvislosť medzi vplyvom parasociálnej interakcie na týchto jedincov a ich schopnosťou získať špecifické schopnosti, kľúčové pre empatiu, ako i pre teóriu mysle. V záujme zachovania komplexného pohľadu boli použité nasledovné typy dotazníkov (test kvocientu autistického spektra, kvocient empatie, test čítania mysle z očí a dotazník parasociálnej interakcie), pričom druhá časť výskumu pozostávala zo získavania vzoriek slín. Výsledky našej práce signifikantne poukazujú na priaznivý efekt takýchto interakcií, vytvorených na základe rôznych impulzov, počnúc prežívaním podobných útrap a hľadaním spomínanej pomoci, či inej možnosti ukrytej v obdive/identifikácii s postavou za vytrvalosť, či statočnosť. I preto je možné počítať s vplyvom parasociálnych interakcií, ako s významnou terapeutickou súčasťou života mnohých jednotlivcov, s využitím jej potenciálu, skrývajúcej sa v doplnkovej starostlivosti, prostredníctvom predstavivosti, v rámci pozitívneho ovplyvňovania, založenom na mentorstve.

Kľúčové slová: porucha autistického spektra, parasociálna interakcia, empatia, teória mysle, predstavivosť, fantázia

CONTENTS

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
ARC	Autism Research Centre
ARCA	Academic Research Centre for Autism
AS	Asperger Syndrome
ASC	Autism Spectrum Conditions
ASD	Autism Spectrum Disorder
AQ	Autism-Spectrum Quotient Test
CA	Character Attachment
CCM	Coping Circumplex Model
CMS	Cognitive-Motivational Structure
CNS	Central Nervous System
DSM	Diagnostic and Statistical Manual of Mental Disorders
EQ	Empathy Quotient
K-POP	Korean Pop Music
MFC	My Favourite Celebrity
MPFC	Medial Prefrontal Cortex
OCD	Obsessive Compulsive Disorder
PC	Precuneus
PSI	Parasocial Interaction

PSR	Parasocial Relationship
RDF	Reality Distortion Field
RMET	Reading the Mind in the Eyes Test
RSTS	Right Superior Temporal Sulcus
SOC	Sense of Coherence
STS	Superior Temporal Sulcus
MRI	Magnetic Resonance Imaging
TPJ	Temporoparietal Junction
ToM	Theory of Mind
vmPFC	Ventromedial Prefrontal Cortex

INTRODUCTION

"Life is not only stranger than we imagine, it is stranger than we can imagine."
- John Burdon Sanderson Haldane

One of the last unexplored mental landscapes is the human imagination. People frequently speculate on how things might have transpired "if only" something had been different. Counterfactual thoughts, which are governed by the same rules as rational thoughts, according to the "fault lines" of reality, are described as aspects, which can be easily altered, while rationality and creativity were once thought to be diametrically opposed. However, studies have revealed that rational thought is more creative than cognitive scientists had anticipated. People frequently come up with alternate scenarios when a simple temporal sequence is presented and the notion that the imagination for counterfactual scenarios is expanding into the new dimensions of this era (Byrne, 2007).

The 21st century is a time-frame, in which are stereotypical bounds and their creation through different types of interactions evolving and updated. An average individual is exposed to a variety of stressful stimuli and situations, so based on that, the specific need may be created, pressuring to seek out social interaction, physical relaxation, therapy, or attention with interactions that take place outside of reality as a way to unwind. One or more of the aforementioned requirements can be satisfied by parasocial interaction.

A rise in this kind of research field was accompanied by an increase in mentioned satisfaction instrument from various fields. Thus, interaction of such type has reached the point, where we are able to accurately define and characterize this domain, because of the persistence of growing interest. It is currently a phenomenon with a global following, that is scientifically supported by academic research, popularizing literature, or a profusion of various articles.

The given sources offered us a range of different views and aspects of the selected phenomenon. We built our master thesis on their basis, with which we used research methods to look into the effects and preferences and priorities of the

recipients, for whom parasocial interactions are a part of life, predominantly in cases, when they need a help, deriving from their non-neurotypical states, by controlling what individuals allow themselves to imagine and create.

Then, the brain may be influenced by these processes of creation, which has the ability to receive learning advantage from experience by using imagination constructively (Reddan et al., 2018). The interdisciplinary nature and current relevance, make it an intriguing subject. The given problem's emergence is continuous, and research on it advances in a number of directions. It is also challenging to process the current terms of events and the range of available professional resources.

Our work also provides a rough overview of the subject's history and globalization, which are largely influenced by modern technology and information technologies. By addressing the stated problem, the part of our attempts also focuses on dismantling stereotypes and prejudices that may still exist in social groups with a particular neurodevelopmental disability, autism spectrum disorder, in which can be the link with the parasocial interaction's field even more profound and advantageous, while drawing attention to the possibility of becoming a popular, modern, technological, therapeutic, and social trend.

THEORETICAL PART

Every kind of interaction, that is created during an individual's life-span, has a specific impact on that very person. The usual approach, used in this equation, requires an event or another living creature, that can trigger the chain effect. Nevertheless, there are many other ways, how can an individual prosper from interactions, which do not have an origin in a reality, but rather more than in an individual's imagination.

The presented possibility to reach and explore convictions and concepts that are not present in reality, creates a new space for parasocial interactions, meaning interactions, living in an individual's mind as a sole reflection of a real persona or absolutely non-existing creature. In this chapter, we provide an introduction to the domain of interaction from our point of research focus.

1 PARASOCIAL INTERACTION

Can the imagination create a safe space and support mechanism, in order to train individuals to act more efficiently in reality?

The definition of *Parasocial Interaction (PSI)* goes back to its roots back in 1956 when it was defined as the illusion of a face-to-face friendship between audience members, along with the main factor of a one-sided relationship (Horton & Wohl, 2016), which is based primarily on the hypothesis that a large audience group knows a lot about a celebrity, whereas a smaller group knows virtually nothing about them, and that most interaction takes place through media since celebrities are rarely encountered in person (Giles, 2009). Our research will be working with the *Parasocial Relationship (PSR)*, as a covered resulting component of PSI.

The phenomenon of parasocial interaction has been measured in the past using a variety of measures. PSI is defined as the psychological (cognitive, affective, behavioural) involvement of a user with a media character in an exposure situation, and can be measured using the Parasocial Interaction-Scale (PSI-Scale),

Experience of Parasocial Interaction-Scale (EPSI-Scale) and PSI-Process Scales, which include 112-items. Additionally, Tukachinsky's 24-item Multiple-PSR Scale assesses parasocial relationships as (a) para-friendship and (b) para-love (Tukachinsky, 2011).

Based on this mentioned evolving process of various PSI-Scales, we can clearly deduce that the prompt for enlarging these kinds of measures is growing and flourishing. Despite not being explicitly psychological in nature, the PSI research to this date raises a number of questions that are of great interest to psychologists, working in both the more general fields of social psychology and relationship theory as well as those interested in the psychology of the media (Giles, 2009).

Gender may also function as a moderator between different forms of loneliness and parasocial engagement. Mainly in aspect, how men and women utilize media to address emotional needs varies (Wang et al., 2008). Besides, women are more likely to have wider social networks and to take an active role in preserving and growing these networks than men. Because they typically have more social support and are better able to rebuild social networks than the other compared group, consisted of males. What is more, women frequently adjust to situational changes better than men do (Helgeson, 1994). But in the end, both genders are able to adjust to such a kind of relationship.

Even if gender may not play a main role of being keen to preserve these interactions, loneliness can create a valid argument for other side of the coin, due to the fact, that lonely people may frequently "communicate" with these fictional characters as if the communication were reciprocal, and these fictitious face-to-face relationships include such a persona in a manner similar to how they get to know their chosen friends or relatives: through direct observation and interpretation their appearance, gestures, and voice, as well as their conversation and conduct in a variety of situations. This is peculiarly advantageous to the fictional character. The persona is then easily available for attachment-related pursuits. After, "winning a heart" of theirs, there is nothing more logical or natural for isolated individuals to seek PSI (Horton & Wohl, 2016).

Although PSI has already been studied through the interest of a person's social support, through media and a particular type of imagination, strictly linked with real-life people, who are famous in many areas of entertainment, PSI can be also frequently found in other ways, for example, with personas from games, movies, books, and daydreams, which may be described as remote-controlled, with the possibility to pause, rewind, or fast-forward to the finale. These opportunities are probably appealing to people with developmental disabilities, who frequently feel that daily interaction is too quick and unstructured (Visuri, 2019).
Our next chapter will be devoted solely to the mechanisms, which are used by individuals in case of situational overload.

1.1 Cognitive Mechanisms of Active Imagination & Fantasy

There are many well-known techniques, which can modify and simplify human functioning in the aspect of interacting, with each other, from the perspective of cognitive replacement.

The term, *active imagination*, was promoted by Carl Jung as a technique of meditation practice that involved dialoguing with imaginary figures or characters from dreams. The term "fantasy-prone" was later developed by psychologists Cheryl Wilson and Theodore Barber to describe people, who spent a lot of time immersed in a fantasy world. According to Eric Klinger, a psychologist at the University of Minnesota, who has spent years researching *daydreaming*, the average person daydreams for about half of their thoughts, or about 2000 segments per day (Bigelsen & Kelley, 2015). From this amount of segments, we can easily assume, those daydreaming episodes cannot be simply belittled as a natural child's activity, when it is part of our everyday contemplating about reality, dreams and inner desires. That can also emerge as a significant problem with the negative side of this process.

Even though it is not formally recognized as a disorder, *maladaptive daydreaming* exposes us to the less desirable aspects of a person's mind-wandering and should

not be regarded as a normal activity. Because having fantasies could be also upsetting (Freud, 1907). In addition, due to these blurry implicants, it is more than hard to decide, if individual daydreaming is out of control if it grows into the maladaptive type of syndrome or if is it just one manifestation of another affliction.

Fantasy is then a major catalyst for original and creative thought and action. When it comes to tackling "real" issues and finding solutions and resolutions, fantasy has the power to free us from the chains of conformity, fixed and rigid ways of thinking, and can even lift us to new ideas and imaginative alternatives. Fantasy not only permits but also feeds ideas and emotions that might be against the law or indicate forbidden ground (Gilbert, 2011).

Thus, all human-beings seem to be experiencing the same symptoms, despite the fact that it is not a medically recognized condition: the hypnotic movements, the plots and characters, and the incapacitating inability to concentrate on the outside world (Bigelsen & Kelley, 2015). Unfortunately, the ability to focus plays the main part in prediction processing, which is more than needed in every aspect of our lives (not only social ones but emotional ones, as well). Therefore "fantasy-prone" activities tend to emerge with entities, which do not require our full conscious functionality and control.

1.2 Dreams & Escapes of the Consciousness

Dreams are from neuroscience's point of view, a very fleeting concept. We can use the knowledge of the following British scientists, as it would be described, down below, but it can be also misleading, because of its own duality, as a part of our night routines, as well as a valid part of our everyday daydreaming.

Nevertheless, Francis Crick and Graeme Mitchison saw dreams as *reverse learning* designed to remove overloads of *neural garbage* from the brain- it is clear that they may also contain, directly or distortedly, reflections of the current states of body and mind (Sacks, 2019). Mentioned reflections can be mirrored in our inner feelings of desperation. Psychology is trying to classify dreams (like jokes, slips of the tongue, and other symptoms) as signs of concealed, conflicting desires because powerful desires can be always in conflict. Possible explanations of how these conflicts lead to unintended expression can be indeed various. One of the reason, why is it like that, is that dreams and other unconscious behaviours reveal desires, that we would prefer not to confront directly, while also concealing them (Library of Congress, 2021). Though it could be argued, that the whole mosaic picture of dreams could be also seen as a contemplation of reality (Rilke & Moore, 1960).

At this point, there is an undeniable significant impact on the concept of reality, from our individual influence, that has the power to rotate the socially accepted values and truths. Furthermore, there are heterogenous variations, how dreams or so-called "escapes of the consciousness" with the aim of individual self-defence against the harsh influence of reality, can find their ways of co-existing in a human mind in a different form, while twisting the actual frame of the reality.

1.3 Reality Distortion Field

A reality distortion field (RDF) can be allocated under the mentioned umbrella of influential results of the twisting forces, changing the general perception of reality. This field is what a person or entity creates to alter the perception of the environment (Sofian, 2019). RDF can simply expand to individuals' needs, in a way that, whenever they desire to switch between these dimensions of reality, the field is requested to change according to their inner desperations.

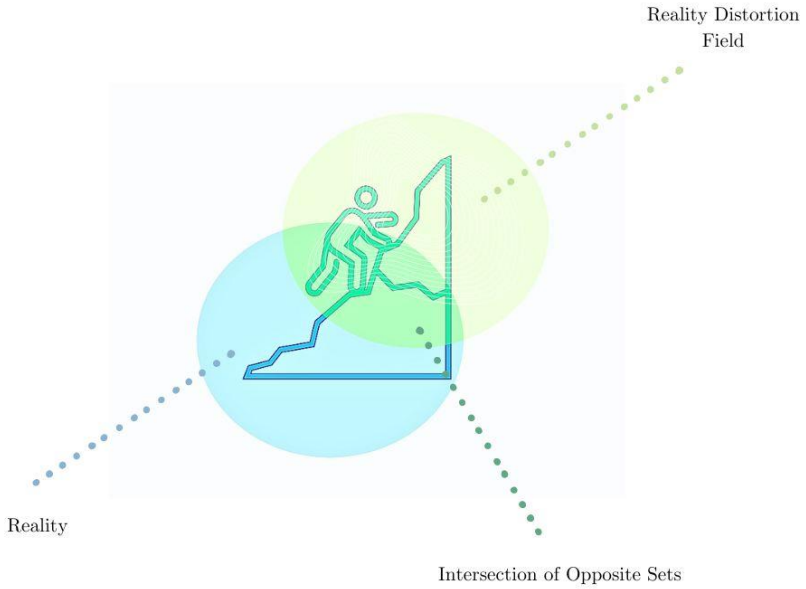

Figure 1: Incorporation of Reality and Reality Distortion Field

Note. **Incorporation of Reality and Reality Distortion Field** (Reality, Intersection of Opposite Sets, Reality Distortion Field). Created based on Sofian, 2019; with Canva.com: https://ibb.co/f0w0JHz.

Thus, fiction may enhance this capacity for daydreaming and imagination, while other side of it, appeals to be connected with the ability to enter the minds of others. However, very little research has examined, how people who have problems with imagination and social cognition perceive fiction and form associated preferences (Barnes, 2012). Social cognition may, in this case, cause some significant struggles for people who are less able to read the social clues and codes, ruling the everyday interaction- sphere. Individuals with *Autism Spectrum Conditions (ASC)* seem to have significant preferences for fiction. ASCs' work suggests that social content and fictionality may both be significant factors in the

appeal of fiction and that the scientific study of fiction may benefit from taking into account the perspectives of people with diverse worldviews (Barnes, 2012).

Although RDF was formerly a phrase coined by Bud Tribble in 1981, while working for Apple Computer to describe co-founder Steve Jobs' charisma and its influence on the Macintosh project's developers, and its ability to spread own specific idealistic frame of reality and insert to others, its purpose can be taken in a very holistic way (Hertzfeld, 1981). According to Tribble, the phrase first was also borrowed from the series *Star Trek* (we will discuss this matter in great detail, later in chapter *2.3 Parasocial Interaction as Coping Mechanisms for Individuals with Autism Spectrum Disorder*), specifically in the episode *The Menagerie*, where it was used to describe, how the aliens used mental force to create their own new world (Hertzfeld, 1981).

Nevertheless, whether this concept has the potential to spread or not, it is only a secondary purpose of it, because of its pure existence in an individual's mind. This fact can lead us to its characteristic trait, which may be also described as malleable, and therefore it is possible to think about many ways of use, whether therapeutic or supportive, during difficult life situations and trials.

1.4 Interdisciplinarity of Parasocial Interaction

Cognitive Science, Pathophysiology, Psychopathology, Cognitive Psychology, Physiology, Neuroscience, Behavioural Neuroscience, Psychiatry, Media Psychology, and Gender Psychology are cooperating together, in order to unveil the possible synchronization of all selected disciplines, with the main target of individuals nurturing PSI. PSI is well-known for its vivid spectrum, which also strongly correlates with the fields, mentioned above, creating a perfect double effect of the present interdisciplinarity of our research. In the summary of the following subchapters, we are going to dive into separate problematics linked with PSI from the perspective of Cognitive Science, Neuroscience, Psychology, Philosophy and last, but not least Artificial Intelligence.

1.4.1 Parasocial Interaction from the Perspective of Cognitive Science

Our research has a strong connection to cognitive science, based on its prevalent occurrence of concepts and theories, which are coming from this field and also, they are trying to cooperate with other disciplines to reach the desired explanation for all unclear phenomena, deriving from of our research.

Exposure to a picture of a favourite character can increase performance on cognitive tasks (Gardner & Knowles, 2008). Both *Attachment Theory* and the *Cognitive-Motivational Structure (CMS)* theory are clinically derived theories of enduring patterns of social behaviour that are related to personality or character formation. According to both theories, these enduring patterns result from early experiences with various forms of upbringing. When describing the time period, in which these experiences are thought, we need to look at how crucial they are in the formation of patterns that persist into adulthood. While CMS theory suggests that the critical period for the formation of such enduring patterns of social function is between the ages of eight and eleven years, attachment theory places a lot of emphasis on experiences that occur during the first year or two of life (Malerstein, 2018). The pattern of social function, showing some specific traits also in adulthood, made us focus on the group of young adults. Nevertheless, we are convinced that cognitive science plays the main role in every aspect of the selected topic, linked to individuals with neurodiverse traits.

1.4.2 Parasocial Interaction the from Perspective of Neuroscience

Although our study addresses more psychological research assessments than ones, used in the field of neuroscience, we are convinced that the influential power of this area can be still more than beneficial, due to connections of psychological concepts with anatomical parts of the brain, involved in the process of mentalizing, as well as imagination.

For instance, the *temporoparietal junction (TPJ)*, a crucial part of mentalizing, has also been linked to individuals with deficits in social cognition, more

concretely in memory, attention switching, and other processes and clinical conditions. Neurological TPJ-related differences that have been seen in these individuals, such as abnormalities in grey matter volumetric and functional connectivity, are additional findings that support the likelihood that the TPJ plays a significant role in aberrant social cognition. The degree of reciprocal social impairment in these individuals is also correlated with atypical TPJ function during mentalizing tasks. However, unlike transcranial stimulation technologies, and does not allow for a direct investigation of the TPJ's function in social-cognitive processes (Donaldson et al., 2018).

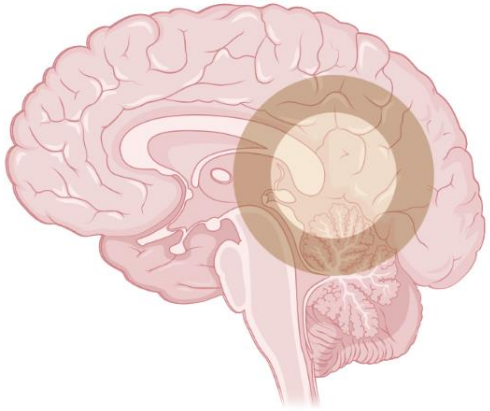

Figure 2: Temporoparietal junction (TPJ) & Mentalizing Processes.

Note. **Temporoparietal junction (TPJ)** as one of the centre for mentalizing processes. Created based on Donaldson et al., 2018; with BioRender.com: https://ibb.co/wJZrVs5.

Indeed, a number of recent studies have shown that knowledge of one's mental states, such as desires, beliefs, and intentions, is one of the most important factors in moral judgments. According to evidence from developmental psychology, children (even preverbal infants) begin to condemn bad intentions that do not have incorrect results. However, depending on the valence of the conflicting belief and outcome, there are various ways that this incongruence can manifest behaviourally when beliefs and outcomes are out of sync. Then, naturally, judgments of punishment depended on both an agent's mental state and the agent's causal connection to a negative outcome. So, there are two distinct moral judgment processes: one that starts with a harmful outcome and condemns the causally responsible agent, and the other that starts with an action and examines

the mental states that led to that action. The domain-specificity and selectivity of these brain regions for thinking about other people's thoughts have been studied in neuroimaging studies. *The medial prefrontal cortex (MPFC), precuneus (PC), right superior temporal sulcus (RSTS),* and *bilateral temporal-parietal junction* are among the brain areas that make up the "theory of mind network" (Ye et al., 2015). We will discuss this matter in great detail, later in *3.1 Theory of Mind and its Involvement in Individuals with Autism Spectrum Disorder.* As we have mentioned through the research of previous studies, prioritizing TPJ and other regions, involved in imagination, which is more than important in creating and future nurturing of PSI, can be valuable and indeed advantageable for the future expanded research in this area. We will take this matter into dissection process, later in chapter *3 THEORY OF MIND,* also linked with repeated imagination of unrealized actions or events, that can cause false memories of them, while it is believed that a reconsolidation process triggers imagination to interfere with already-formed memories.

Afterwards, a consolidated memory enters a labile state again after being reactivated, which leads to the final state of reconsolidation. The memory could be "updated" with latest data before being reconsolidated (Reddan et al., 2018), which can be also one of the valid explanations, how may actual PSI be versatile and capable of adjustments to the current needs of an individual.

1.4.3 Parasocial Interaction from the Perspective of Psychology

Every kind of human interaction has its own double influence and PSI is not an exception. There is an assumption that during PSI, we can observe both, the positive and negative effects on psychological health and wellbeing.

Thus, PSI has the power to support an individual's wellbeing, such as psychological need satisfaction, stress relief, self-presentation and self-enhancement. More concretely, in the context of media, we can see the gap between theory and "real life" by reflecting, how it can affect happiness and

fulfilment in very various life domains. It addresses the public, private, and work spheres to direct the complete range of daily quests. Also, the effects are different in diverse life stages and circumstances (Reinecke & Oliver, 2016).

In the 67 years since Horton and Wohl (1956) coined the word "parasocial", several studies on PSI have been carried out employing various sorts of media, including movies and video games, and various types of media characters. Yet, there has not been much study done on PSI in the general context of PSI and mentioned diversity of life stages of an individuals. Apart, from media, we have learned that books typically employ different type of engagement for the individuals. Written words to tell their story are replaced by sounds or movies and series or computer games. As a result, they vary in terms of modality and information coding (*visual versus audiovisual*, as well as *verbal versus pictorial*). Research on information processing suggests that multimodal and multicodal media predominate, and it assumes that media like television have a favourable impact on information processing, leading to greater elaboration compared to novels. If so, it would appear rather incautious to simply apply the understanding of parasocial phenomena learned in the context of television to the context of books because people receive information from the two forms of media differently (Liebers & Schramm, 2017).

In any case, every kind of source for PSI has for the individual its specific role and meaning, mainly in psychological health's side. It can be sometimes in a form of *psychotherapy*, which is pointing to the search for meaning in cases of unsureness and blurry truths. The father of the aforementioned methodology, Sigmund Freud, saw the quest for meaning as an expression of anthropocentric vanity; however, this assertion cannot be made without first performing a delirious distortion of reality (Domínguez-Morano, 2020).

The interrelationships between these various dimensions have also never been compared, nor have they been analogized to longer-term constructs, like PSI, that extend beyond a single experience of reception. In addition, PSI has been investigated in connection with other reception dimensions (such as the realism

of the storyline or the experience of presence). Then, there is also an assumption, linked with specific cases, during which individuals believe that the plot is more realistic, they have a more intense PSI (Liebers & Schramm, 2017).

But realistic frame can be found in all social interactions, begin either with individuals' perception of others, who are right in front of them or with individuals' consideration of others who are not. The nature of their cognition and the way they choose to act is then determined by what they infer about these models designed for selected individuals (Moskowitz, 2005). What is more, many people, view media figures and selected personas in general as a special kind of friend who sticks by them through good times and bad. These relationships are frequently upended by events that cause sorrow and distress akin to an in-person. Because of the potential significance of parasocial phenomena, it is crucial to carefully consider any potential long-term consequences, linking longer-term parasocial relationship with other aspects of media reception (Cohen, 2004).

Due to the fact that this topic is so broad, general psychology is supported by a variety of disciplines, including communication, media psychology, social psychology, clinical psychology, as well as media education and many others (Reinecke & Oliver, 2016), while advocating these unique types of bonds, depending on internal drives of an individual. Therefore, the focus of interest in a specific bond with a character, creates the most prosperous conditions for further evolving fashion, within selected interaction.

Character attachment (CA), a multifaceted idea, is the psychological internalization and fusion of an individual's and a character's minds, that is encouraged by various sources. CA's dimensions can help us comprehend both pro- and contra-social individuals/attachment creators-motivations (Bowman et al., 2012). Attachment underlined with love and admiration is something that person values and should not carelessly discard. It places obligations on the person, and in order to fulfill these obligations, the person must be willing to make sacrifices. Naturally, a person must have earned the connection to another person if they are related to them in an aspect of common similarities. That

individual merits it if, in some crucial ways, he or she resembles the devoted person, which enables him or her to adore and respect that person without conditions. Additionally, a person who is admired deserves it if their overall selves are far superior to those of those who show them admiration because of their idealized portrayal of the admired one (Freud, 2014). The use of imaginative play to clarify and explain the current popularity and prevalence of religious imaginal dialogue. Additionally, also the study of religion places a strong emphasis on conceptual psychological issues (Mackendrick, 2012).

Comprehension of this fact could lead us to the path of reconsidering our PSI in the past, as not only the phenomenon of the current massive influence of social media, predominantly, but something, that can work as a natural psychological support mechanism in every overwhelmed individual. In addition, playing with our thoughts and ideas did not always come up with practical reasons, and if that is so, we can classify PSI as a mind escapes for calming down our minds, in order to resolve and maintain the overall frame of psychological health.

1.4.4 Parasocial Interaction from the Perspective of Philosophy

Another significant field generating heterogeneous theories about ways of communication between recipients and their selected persona in the frame of PSI is the philosophical one. There are no meanings that the speaker and the listener share. Meanings are not autonomous things. We can look up a word's meaning in a dictionary, but dictionaries, at best, only provide other words with similar meanings. We must find a dictionary that has definitions already (Skinner, 1976).

But this dictionary can be omitted in some cases, due to the extension of worship. Therefore, if an individual worships the selected persona or in a simplified way, an idol, PSI will give to the individual everything so that one can enjoy the brilliance of its virtues (Nietzsche, 2006). Nevertheless, in its pure state of PSI, we can also theorize about various meta-representation, that can be linked with the following dominating traits (Gabbai, 2015):

1. The ability to create and believe in fiction is what makes sapiens truly special. All other animals describe their world using their communication system.
2. We construct new realities using our communication infrastructure.

Of course, not all human beings share the same fiction and all of the interactions for the selected persona will not be the exact same for every kind of individual, who freely created PSI's bound.

But there is a valid representation for a word-wide collective imagination with the same effect and that stands for the money. Money is one that has spread throughout our world. Despite the fact that bills only have value in our collective imagination, everyone still believes in them (Gabbai, 2015). In addition, Yuval Harari said that human inventions are only possible thanks to collective fiction (Baron-Cohen, 2023), which only supports our theory of the supporting power of PSI in the field of collective fiction, in general.

In this case, it is also very important to introduce the key term, which has the ability to cover, such fiction: *Alief* is an automatic, subconscious attitude that resembles a belief but may be in conflict with an explicitly held belief (Gendler, 2008). The term *alief* was introduced by Tamar Gendler, a professor of philosophy and cognitive science at Yale University, which also stands for the true interdisciplinarity, building bridges between philosophy and psychology, as well as other scientific branches.

1.4.5 Parasocial Interaction from the Perspective of Artificial Intelligence

Representatives of the digital setting, also known as *chatbots,* are slowly entering the world of human interaction and communication in various fields of social situations.

According to the theory that the computers-are-social-actors paradigm, *artificial intelligence (AI)* and other rapidly developing digital technologies continue to

have a significant impact on retail and consumer services. The use of chatbots powered by AI is one area that is gaining popularity in the context of human experience and expectations through real-time interactions (Song et al., 2022). These real-time interactions can be beneficial not only in customer services, or in the field of work dimension, but there are also influential marks, implying such technologies can be used also as fulfilment for personal desires and needs.

Technical stimulation of a human within a virtual reality or in words the virtual world has the power to attract and absorb (Dubey, 2020). Devouring individuals into such an environment brings lots of new possibilities, linked with the interactions, in general, and of course, it can include PSI from the real world (for example, from media) transmitted into another one.

Due to people's inability to interact with others without any significant problems and cope with a daily life in a community, virtual relationships can last for quite a while. They rely on the chance of communication provided to them by the outside world, which is based on a lie about fake cohesion, over a long distance (Dubey, 2020). Nowadays, there are more than plenty of ways how to reach this fake cohesion. When we consider all of offered aspects, for example, the idea behind *Korean Pop Music (K-POP)* chatting apps makes an interesting unreal continuity. These apps aim to create parasocial interactions — a largely one-sided relationship experienced by fans, who consider media personalities, as their close friends despite having little-to-no interactions with them — which are similar to most social media platforms, but different from such traditional means of communication. This is then an "illusionary experience", in which people interact with personas as though they have mutually beneficial alliances (Pradeep, 2022).

We will discuss this matter in great detail, later in chapter *3.2 Mirroring Abilities of Individuals with Autism Spectrum Disorder.*

One side of this issue may be rather negative due to its illusionary effect, but on the other hand, there are also cases, which support these connections, because it has the potential to make people with low self-esteem feel better about themselves (Pradeep, 2022). Another option is opening a door to *ChatGPT*, which is a

natural language processing tool driven by AI technology that allows you to have human-like conversations and much more with the chatbot (Ortiz et al., 2023). As ChatGPT evolved from a novel chatbot into a piece of technology, that is guiding the next era of technological innovation, it has continued to dazzle the academia, as well as the lay society. As AI technology became more and more common, ChatGPT quickly rose to prominence for its astonishing capacity to produce answers to almost any question. ChatGPT has been trained as a language model on a large dataset to deliver pertinent and coherent information in a matter of seconds. This contributed to its enormous user popularity, also in the K-POP market (Qin, 2023), which may in the future predict slowly but steady fall of previously mentioned chatting apps.

In addition, *a "one-and-a-half" sided relationship* is getting more and more recognition between the lines of current marked linked with new ways of connectivity and connection, while it is marked by the potential for reciprocal communication, strong community affiliation, fandom cultures, wishful identification, high emotional engagement, and increased presence, has replaced the traditional one-sided relationship as a result of the proliferation of online media *microcelebrities* via live streaming (Kowert & Daniel, 2021).

Whether we are talking about traditional PSI or the current evolved one, this reciprocal support for one another's happiness runs through both fandoms of idols/personas/celebrities and fandom in general. Even though these idols/personas/celebrities never anticipate to recognize individuals separately, within the crowd, the ones providing admiration towards them are constantly expressing, how happy idols make them. The same result can be achieved in a digital setting by having an app, where an individual can show support for an artist regardless of whether they see the note or not. According to psychologist Cynthia Vinney, PSI is common, psychologically healthy, and can improve real-world social interactions (Boxall, 2021). Of course PSI may be still linked with maladaptive obsessions, which can be categorized into the group of risk and threads. But here is an assumption, that during PSI, we can observe both, the

positive, as well as negative effects on psychological health and wellbeing, in the constant frame of seeking reward and inner fulfilment. With the potential to forge new kinds of connections and emotional bonds, reward-aim is the most motivational fuel for keeping the PSI. However, because there is a trend to constantly choosing environments, where individuals prefer to be with others, but not in a way of real interaction, it creates a startling number of dead ends for the healthy natural human bonding process. PSI in the context of a non-natural virtual environment can be then influenced by many domains, such as the availability and connectivity for providing a stable field for connection, social engagement, to serve as protection and preservation of continual interest, the evolution of social interactions with function to provide insights into interactions of this type in the past, chatbots, to mimic and maintain the communication channels, then the bonding mechanism, to trace the loop of the strength of attachment and last, but not at least, the state of wellbeing (Fig.3).

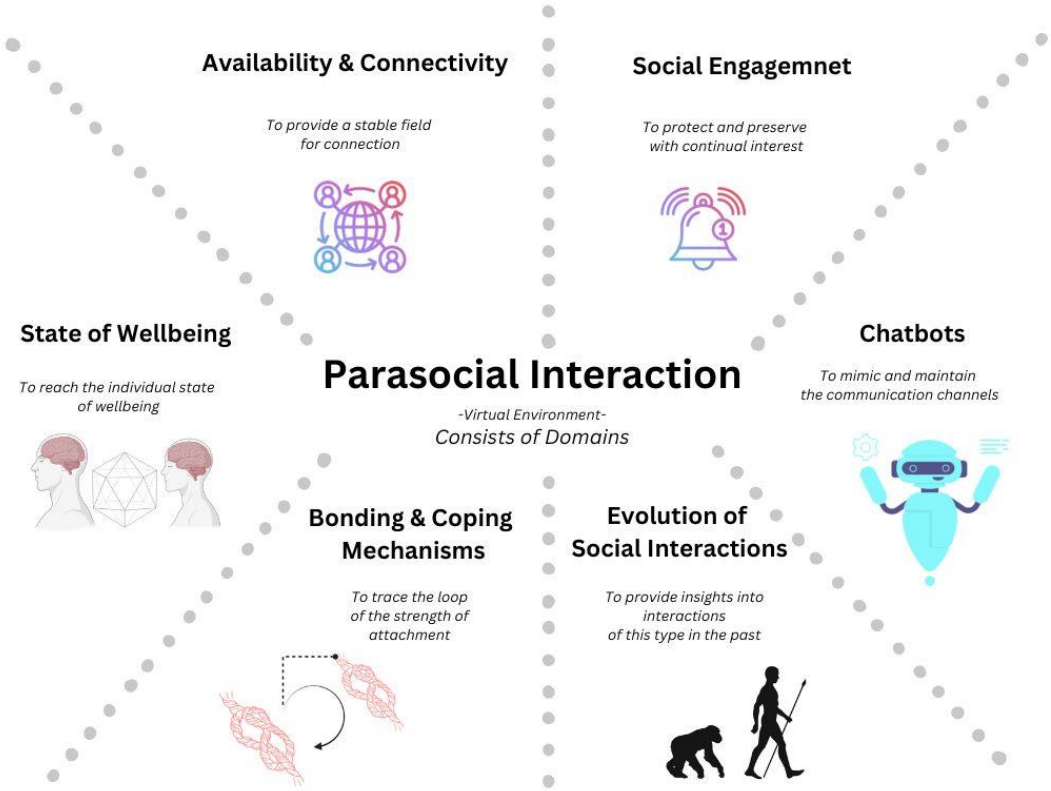

Figure 3: Parasocial Interaction in Its Domains

Note. **Parasocial Interaction in Its Domains** (Six Major Domains). Created based on Mackendrick, K. G., 2012, Lee, M., and Lee, H. H., 2022, Agomuoh, F., 2023, Dubey, G., 2020, Wang, Q., Fink, E. L., and Cai, D. A, 2008, Pearce, E., Wlodarski, R., MacHin, A., and Dunbar, R. I. M, 2017; with Canva.com: https://ibb.co/4Vw2YBY.

This ongoing conflict between reality and the virtual worlds has the potential to create a loop that confines the user who is actively using it. Due to the reality distortion field, however, this step of the process is bypassed. Nevertheless, recent progress demonstrates that the virtual environment and technological improvement have significantly changed our interaction patterns. And even though, there is still a high risk for individuals' healthy social circles, the potential of PSI, either through various sources, covering media, or chatbots is significantly rising and can be considered as a part of the treatment for anxiety, trauma and many other mental conditions with the effectiveness and success of therapies supported by current technology.

2 AUTISM SPECTRUM DISORDERS

Is Autism Spectrum Disorder a valid prerequisite to develop a strong interest in characters, existing outside of reality?

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental disorder characterized by its wide range, which is in general linked with significant difficulties in social communication, stereotyped/ritualistic behaviours, and deficits in sensory reactivity, as well as deficits in several domains such as cognition, memory, attention, emotion recognition and regulation, and social skills (Khaleghi et al., 2020). Thus, this neurodevelopmental disorder is characterized by various symptoms, therefore a very suitable term for this condition is a spectrum, which is trying to emphasize on its multiple differences. The DSM-5-TR lists the signs and symptoms, while underlining the complexity of how many of these must be present to confirm a diagnosis of autism spectrum disorder (American Psychiatric Association, 2022).

To be diagnosed with autism spectrum disorder, individuals must exhibit (World Health Organization, 2019):

- Understanding of, interest in, or incorrect responses to the verbal or non-verbal social communications of others.
- No integration of verbal communication with the usual complementary non-verbal clues, such as body language, gestures, and facial and eye expressions, while the frequency or intensity of these nonverbal behaviours may be decreased.
- Non-appearance of pattern, how to use language in social situations and having the ability to start and maintain reciprocal social conversations.
- An absence of social awareness that results in behaviour that is improperly adjusted to the social setting.

- An absence of detecting and understanding other people's emotions, mental states, and attitudes and the ability to react to them.
- Decreased connecting functions on the level of mutual sharing of interests.
- Decreased traits, supporting specific skill of forming and maintaining typical peer connections.

Of course, like it is with any other disorder, there must be some protocol or specific rules to follow regarding the classification, itself. But rather than using functioning labels, the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) uses three levels of autism to diagnose the severity of impairment. The levels are (American Psychiatric Association, 2022):

- Level 1 ASD, formerly known as high-functioning autism, is the mildest form. People with level 1 ASD require support.
- Level 2 ASD, is the middle level. People with level 2 ASD require substantial support.
- Level 3 ASD, formerly known as low-functioning autism, is the most severe form. People with level 3 ASD require very substantial support.

Individuals with level 1 ASD, also known as high-functioning autism, frequently have far greater independence than those with more severe forms of the disorder. They typically have strong language skills but struggle with social communication. They frequently exhibit rigidity or inflexibility and struggle to switch between tasks. And even though those with level 1 ASD are frequently regarded as high-functioning individuals, challenges with social communication and restrictive or repetitive behaviours can seriously impair day-to-day functioning (Rudy, 2022).

An old name for a level 1 autism subtype, *Asperger syndrome (AS)* was used by Hans Asperger, a physician who first recognized it in the 1940s (Maenner et al., 2014). Individuals with Asperger's syndrome frequently exhibit high intelligence usually in special domains and obsessive concrete interests, which they may study

in great detail. Clumsiness, repetitive behaviours, and trouble interacting socially are all possible effects of Asperger's (Mount Sinai, 2021). Nevertheless, the term Asperger's is slowly no longer used and is, in some circles (Czech, 2018). Also, terms like "high-functioning" (generally very low symptom counts and a high IQ, linked with satisfactory academic performance, while supervising it through teaching support's mechanisms) and "low-functioning" (the most severe signs of ASD, which are often identified at level three, while there is need for life-guidance and caregivers' support) autism are archaic and potentially deceptive. The DSM-5 now includes three levels of autism based on necessary levels of support, replacing functioning labels (Rudy, 2022). In other words, high-functioning individuals with ASD, are those who are or appear to be closer to neurotypical.

For instance, many define a high-functioning person with ASD as (Burrows et al., 2016):

- Possessing the capacity for verbal communication.
- Being able to manage academic expectations, which is frequently a result of speaking out loud and being more cognizant of others' expectations.
- More likely to participate in general classrooms and extracurricular activities, with or without assistance.
- More conscious of social customs, such as how to properly use utensils and greet others.
- Likelier to pass for typical (until a conversation or event makes their ASD more obvious).

But the primary symptoms can show up as a lack of social interaction, language impairment, and repetitive behaviour at a high level (El-Ansary & Bhat, 2020). Mentioned repetitive behaviour is very common in individuals with ASD. There are a lot of cases, where we can detect a demonstration of stimming, which can be hardly stoppable, due to the constant urge to keep repeating it.

Furthermore, individuals with ASD frequently struggle with thinking issues (problems with attention, focus, organization, management, task planning, and

completion)(Rinehart et al., 2016). This is also summarizing challenges for individuals with AS, which is often described as various milder forms of ASD (Ellis et al., 2019). While AS is significantly more prevalent than classic autism, AS features typically manifest later in childhood. In fact, the diagnosis is frequently not made or suspected until the child is in school, and many people go on to be capable of leading an independent adult life (Scully, 2014). But anxiety and depression frequently co-occur with it. Individuals with AS may also experience anxiety in ways akin to social anxiety, such as a worry about performing poorly in social situations (McPartland & Volkmar, 2013).

And this might be a true hardship of its own. Because human-kind always flourished and improve through social gatherings. After all, learning from others has been always easier than learning through own mistakes. Working together as a whole, as one social unit has been proven as more effective and reachable in comparison to the attempts of sole individuals. Although it is easier to abandon those, whose social skills are not evolved enough, the unique power of the brain can help the whole, even more, therefore it is more than needed, to not only accept them, but also to help and understand them, in an attempt to better dive into their true selves.

2.1 The Evolution of Special Interest in Individuals with Autism Spectrum Disorder

As the previous chapter has been indicating, the true self of individuals with ASD plays a crucial role in the machinery of higher comprehension of their abilities, as such. At first, we can unveil only symptoms and behaviours, which are rare to neurotypical brains, so we cannot link them. But as we already learned from the past, every detailed observation can bring us to a significant revelation.

ASD's story has also its own begging with just a group of people who exhibit social deficits in specific traits. The history of diagnoses for people with ASD is in fact colourful (Silverman, 2015). The process linked with diagnostics and

narrowing the field of the diagnosis, was a long, painful path (and in some circumstances, it still is), taking into account that many adults may be living with an undiagnosed autism spectrum disorder. The majority of them, received treatment for a psychotic disorder in mental health facilities, frequently on the basis of evidence linked with delusional thinking. Although it is plausible to assume that some of these individuals, in fact, had a schizotypal disorder, which is a condition nosologically connected to schizophrenia, others were likely to have an autistic spectrum disorder without comorbidity and may have received a schizophrenia diagnosis in error (Woodbury-Smith et al., 2010).

Another factor lies in the current increased rate of individuals, who are diagnosed with ASD. Results show an expansion in the measured prevalence of autism around the world, which reflects the combined effects of a number of factors, including a rise in public health awareness and global public health response advancements in case identification and definition (Zeidan et al., 2022). The mentioned rise in the community can have a double-side effect, too. One of them is a way to look in our past to solely search for the individuals with specific traits, which would create in today's world, as we know, the diagnosis, indicating ASD. Multiple reasons may play a part on their own. Of course, curiosity might be one of them, but delivering proof that ASD is not only a cause of recent life stereotypes, but on the other hand, it has been with the human-kind for a long time, is also unassailable evidence for the scientific, as well as the general community.

For example, Newton and Einstein's personalities were examined by Baron-Cohen, a Cambridge University psychologist, and mathematician Ioan James of Oxford University to determine, whether they exhibited the three key Asperger syndrome symptoms of obsessive interests, difficulty in social relationships, and communication difficulties (Muir, 2003).

One individual of such a kind might be Henry Cavendish, an influential experimental and theoretical chemist and physicist, who was also an English natural philosopher and scientist, while there is a possibility, linking him with

Asperger's syndrome, although this idea has not yet been thoroughly investigated. Cavendish is taken into account, using the diagnostic framework outlined by Gillberg, with additional support coming from the DSM-IV. Given that Cavendish's biographers describe his status as the "incomplete man"—the oddly misanthropic man defined by negations—the potential for such a retro-diagnosis is obvious. Thus, Cavendish shows himself to be a man of extraordinary intellect, whose syndrome stunted his social development and expression. In the beginning, issues pertaining to a "retro-diagnosis" supported such an evidence, but then Cavendish was contrasted with Gillberg's and the DSM-IV criteria, which raised a number of new questions (Lidbetter, 2009). Based on this example, although "retro-diagnosis" seems to not be indeed accurate and always precise, it also gives as a possible argument for mentioned cases in the past.

Needless to say, the research comes a long way, when we look into the first edition of Child Psychiatry in 1935, which was unmistakably in Meyerian spirit. But most importantly, the essence of the neurologist's approach, according to Kanner, was that *the child was viewed as a whole, not as a tangle of symptoms and dysfunctions* (Steve Silberman, 2016), which seems to be a true key even to these days. We can even find plenty of examples of building a reference of celebrities or famous personas by individuals with ASD. But this movement of prevalent diagnostics linked with ASD started long before with small indicators. One of them is Donald, a boy, which was under examination of Kanner and also described in the book called *Neurotribes*. He used to repeat strings of words that at first glance seemed indeed meaningless. For example "Dalia, dalia, dalia", or "Anette and Cécile will create a purple", which was his usual stimming string while drawing. It was only later, that Kanner put certain facts into the context and realized, that it was a matter of naming the bottles with five watercolours after the famous Dionne quintuplets. And so red symbolized Anette and blue was for him Cécile. Therefore, by mixing them together, the purple colour was actually created (Steve Silberman, 2016). Based on mentioned evidence, individuals with ASD are indeed linked to the unique interest of their own. *Special interests* can

be so intensely compelling that they become the only thing a person wants to do or talk about. This is a defining characteristic of them. Past or current conditions lead to a complex picture of specialized skills. For example, in the book of Oliver Sacks, we have the pleasure to meet the *Anthropologist on Mars*, which are concrete words from the perspective of an individual with ASD, Temple Grandin, a consultant for the livestock business, now a faculty member with Animal Sciences in the College of Agricultural Sciences at Colorado State University (Sacks, 1996), supporting the hypothesis, consisting of tendencies to alien-like-mindset (more in *2.3 Parasocial Interaction as Coping Mechanisms for Individuals with Autism Spectrum Disorder*). Another well-known case is John Elder Robison, a car restorer, but now famous for turning his hobbies into successful careers (Robison & Pascual-Leone, 2017). Nevertheless, it was not a simple path to differentiate these special interests from, "limited, repetitive patterns of behaviour, interests or activities, or constrained interests", as they have historically been referred to by clinicians. Specialists in these fields have only just started to understand the value of these intense interests that start to appear in early childhood. These fall under the category of autism diagnosis. And interestingly, between 75 and 95 per cent of individuals with autism exhibit these interests in a very intense way (Laber-Warren, 2021).

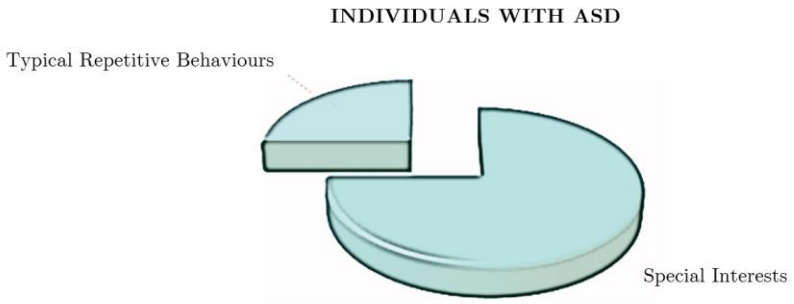

Figure 4: Behaviors vs. Interests

Note. **Individuals with ASD** (Typical Repetitive Behaviours, Special Interests). Created based on Laber-Warren, 2021; with Canva.com: https://ibb.co/fXFk0wj.

The research field of psychology is working diligently on reducing the troublesome traits of special interests. And in order to better understand the neurological

circuitry involved, neuroscientists are starting to investigate, how the brain, processes unique interests (Laber-Warren, 2021). So, the process of diving into this topic has already positive outlooks, hand in hand, with the powerful voice of parents, who are also enormous enthusiasts about research for the future wellbeing of their kids with ASD.

2.2 Affection Therapy for Individuals with Autism Spectrum Disorder

There are many types of therapies and behavioural programmes for individuals with ASD. In fact, there is sometimes quite difficult to make the right choice for the individual and find the correct support, which would be only beneficial for the right development, as well as everyday functioning.

Quite often, the burden of the decision is usually on the parent's shoulders. One of them is Ron Suskind, who as a writer demonstrated in his 2016 documentary "Life, Animated", how his son Owen's love of Disney films helped him learn to speak, special interests can significantly boost children's life skills. The study of interests is expected to benefit a lot more kids who might otherwise be difficult to reach, according to experts. According to Massachusetts University of Technology neuroscientist John Gabrieli, *"To meet the child where the child is"* is a term that is occasionally used. If this is their innate ability to motivate, then embracing it may benefit the youngster more than attempting to repress it (Suskind et al., 2017).

The key to what Ron Suskind refers to as *Affinity Therapy* is for the professional or parent to determine, what their specific child has an affinity for. For instead, trains, *Disney* characters, *Lego* or in other cases it can be something completely different. Most likely, it will be about a subject that is very predictable, very repeatable, but crucially, something the child has chosen for themselves rather than something that has been forced upon them by a well-meaning adult, who has chosen to ignore what that particular child enjoys doing all day, every day. Listening to them, watching them, taking their lead, utilizing their interests and

focusing the therapy on that particular passion may built a new way of understanding pathways (Dogwoof, 2016).

One of the affinity can be also category linked with fairy tales. As it was mentioned before, they have a special way, how to bound with children and not only this lower age category, but Owen Suskind, the main character of Life Animated, (now a young 25 years old adult), who remains to express and keep this affinity, until these days. The reasons are indeed diverse, but *Disney* movies also had a few other crucial components for this particular child: they could be repeatedly watched, making them predictable, creating a safe space for simplistic predictability. He could memorize every word, gesture, action, and vocal inflexion. And because he adored the movies, he did not require any additional encouragement to pay attention to the information. Movies offered him these intrinsic rewards. The villain and the hero, resolution of moral quandary, good versus evil, love versus hate or envy, saviour versus oppression and many more. These are some of the themes that *Disney* movies have a way of simplifying the complex social world into pieces (CRAE, 2017).

Additional encouragement to pay attention to the information and work with specific deficits in individuals with ASD is more than critical. In addition, the opportunity of copying actions, reactions and emotions can definitely be a desired spot for all of kinds of therapies, based on the fact that populations with ASD fight with significant struggles in the area of cognitive empathy. Another huge importance of getting required skills is ability linked with symbolic thinking- as a part of Empathy Circuit- for art, language and even thoughts (Baron-Cohen, 2023). Moreover, cognitive neuroscientists John Gabrieli and Kevin Pelphrey, based their research on the special interest in fantasy characters in the digital space, where they put an individual with ASD, played a scene with their favourite character, but participants did not know, that the parent of theirs, was hidden in the different room, speaking for the character (Fig. 5) - an emotional illustrative situation with their verbal feedback and patterns of emotional responding (Suskind et al., 2017).

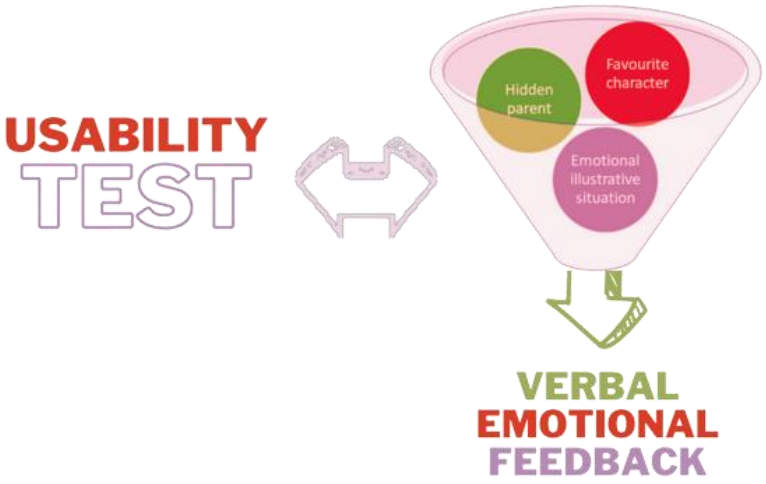

Figure 5: Usability Test

Note. **Usability Test** (using Hidden Parent, Favourite Character and Emotional Illustrative Situation with the Effect of Verbal-Emotional Feedback*)*. Created based on Suskind et al., 2017; with Canva.com: https://ibb.co/98mgRZq.

Thus, technology is being used by educators and clinicians more frequently in the context of current teaching and therapeutic approaches. For people with autism spectrum disorder, the growing use of mobile clinical tools is especially promising, because technologically based interventions have been shown to be effective and accepted in this population. Additionally, these tools have the potential to address two significant barriers to ASD intervention, namely skill generalization outside of the therapy office and the anxiety and/or skill deficits, frequently connected with face-to-face interactions. In other words, technology use could be a crucial first step or prerequisite to the development of face-to-face therapy (Birtwell et al., 2019). Furthermore, this mentioned first step can lead to a mixture of improvements, underlying cognitive capacities, such as interpretive speech, symbolic thinking and contextual awareness (Suskind et al., 2017). All in all, life is only a unique set of experiences, but unfortunately for ASD, mostly emotional ones. We, humans, can adapt to just about anything. Even adversity can be overcome in the most trying situations by using a wide range of coping mechanisms. By altering our thoughts, we can change how we feel, thereby reducing the emotional effects of an otherwise upsetting experience (Ochsner et al., 2002). At this point, we can only hypothesise, if reducing the feelings,

specifically, in the case of ASD, was a clear step to the evolved adaptation or an error in development. But in any case, we can see that even in ASD, there is possible to trigger emotional awaking, simply based on a change of their emotional experiences, originating in their special interests.

Reappraisal is the term for the cognitive transformation of emotional experience. Reappraising an upsetting event without emotion reduces then a negative affect (Ochsner et al., 2002). The pressure on individuals with ASD is indeed prevalent, mainly in situations of sensory-input-overload, in which they are protectively shifting to their special interests, in other words, PSI, works as their coping mechanism in situational difficulties, described in the next chapter.

2.3 Parasocial Interaction as Coping Mechanisms for Individuals with Autism Spectrum Disorder

Coping Mechanisms and adaptation skills are key features in successfully adjusting to everyday life challenges. Coping strategies are an essential part of the psychological immune system, which leads to a successful adaptation process (Takács et al., 2021).

In the field of ASD, there are different possible unveiled coping mechanisms, while one of them can be *Stimming*. Although stereotyped or repetitive motor movements' are listed as essential characteristics in the diagnosis of autism, many individuals with ASD, (as well as the neurodiversity movement) have renamed these behaviours as mentioned stimming. However, little research has looked at stimming from the viewpoint of individuals with ASD. Still, there is a possibility for thematic analysis, as follows: (1) stimming is a self-regulation mechanism and (2) stimming lacks social acceptance but can gain acceptance through understanding (Kapp et al., 2019).

There have been many attempts to conceptualize coping, but the fundamental categories remain unresolved. *The Coping Circumplex Model (CCM)*, aims to integrate various coping distinctions. The model is predicated on the premise that

individuals must deal with two tasks simultaneously, when confronted with stressful situations: they must solve the issue at hand and control their emotions. These two tasks are represented by two corresponding dimensions, namely the problem-solving dimension and the emotion-coping dimension. An interpretation of bipolar dimensions is problem and emotional coping. This is significant, because it creates a framework for additional coping categories (Stanisławski, 2019). Controlling emotions can be for individuals quite difficult, therefore there is a chance of coping with it through PSI, more concretely putting their preferable persona into the position of role model. The role model has a very big influence on devoted individuals. Starting from small habits that change to being a much more different individuals than before (Sheridan et al., 2006).

As it was mentioned before, in the case of Owen Suskind, we can see a significant permanent influence, coming from his favourite characters, as sidekicks. These variables in his life played a part as a role model, until he gained the strength to cope with reality. He gave them a quest to search for a hero, while not realizing, that he was the hero, all the time. Nevertheless, it was his behavioural pattern of hidden strategy, due to the simplifications of his own word, mainly in an emotional sphere, so emotions were exaggerated, therefore easier to understand (Williams, 2016). In this perspective, it was *Disney*, that provide the emotional base, but in most cases, social media and popular culture are factors, that cannot be omitted from this equation.

According to Rosenberg, the formation of adolescent self-concept is becoming increasingly complex as a form of the impact of the rapid development of mass media and popular culture. Giles and Maltby found that a public figure in the media has the potential to be one of the most important figures perceived by young people today, who support this view (Sheridan et al., 2006). This is only truthful, and thus media can have a wide impact on society and individuals with ASD are no exception. Many of them reported specific interest in their preferable persona called *Spock* from the series *Star Trek*.

While for someone, it can be surprising, there is a very logical explanation, behind this mass admiration of mentioned persona as a role model, coming from Vulcan civilisation. In order to prevent self-annihilation, the primitive and disorderly Vulcans adopted ritualistic emotional control and the strict logic of their culture. In order to help themselves survive, the Vulcans actively embraced traits that viewers might consider "autistic." In fact, the prejudice that Vulcans face in the *Star Trek* universe is similar to the prejudice that individuals with autism spectrum disorders face in our own society. The enduring figure of Mr. Spock struggles to define himself between human and Vulcan cultures. The foundation of Spock's relationships with his co-workers and friends is his ongoing journey of self-discovery and understanding aboard the starship Enterprise, which mirrors the history of his culture. As Spock's persona is revealed, he frequently exemplifies, how his autistic characteristics help him when 'saving' the day. Numerous people have negative perceptions of ASD traits, which include literal interpretation, tactlessness, non-conformity, rigid thinking, and disdain for pointless social interaction. Spock, on the other hand, thinks logically, morally, and methodically. He makes wise assessments of situations and communicates them to others without the need to muddle them with social nuance or complexity. Spock could serve as an all-too-rare positive role model for people with autism spectrum disorders by highlighting the importance of ASD traits and reversing negative perceptions of autism (Lawrence-Smith, 2014).

Moreover, Spock-Persona can be used as a double weapon, not only as a tool for more positive "ASD Image", but also as a coping and calming strategy for the individual need. It is important to state, that Spock is hardly the only persona, on the screens, who had the power to enchant these individuals and wider society. On the other hand, there are prevalent more and more movies, series or book's individuals with specific traits, that can be easily linked with the ASD category, while providing selected individuals with the required PSI, which can have also an educational impact on the individual embracement.

One of them is *Sheldon Cooper* from the series *The Big Bang Theory.* He represents some of the so-called Nerd Culture's most prized traits as a brilliant but socially awkward and irritably precise physicist: an eidetic memory, enormous mental processing speed, and immunity to political movements, social complexities, sexual expectations, and cultural norms. For those who have ASD as well as for the families, teachers, and clinicians who make up the autism community, he has come to be regarded as a common reference point. Individuals, who are interested in pop culture make assumptions about, where he fits on the ASD and use his demeanour as a guide to explain specific behaviours (Matthews, 2019).

Another example can be hidden in the *Marvel Cinematic Universe*, which provides us with the various palette of heterogeneity, within patterns and symptoms, which can lead in the end to neurodiversity and ASD, specifically.

Parents of kids with ASD reported, their kids were actively identifying with the character *Drax* when *Guardians of the Galaxy* debuted in 2014. Viewers on the spectrum felt understood by the character's steadfast literalism and straightforward speaking style. Drax has his own ways of showing his teammates that he cares about them, even though he sometimes finds it difficult to understand the subtleties of their emotions (Danger, 2022).

Representations of ASD on the screen, in books or games have the potential to display specific everyday struggles not only to the neurotypical audience, but it also may have been a reflection of actions and how-to-do-personas for the individuals with ASD, shutting down into their own world, due to the multiple differences from their own word to reality, without any context, while finding them- these representations, as equal individuals with the possible same compassion for certain life hardships.

Wilson Fisk is another suitable example from *Marvel's Universe*, due to his particular routines, his dislike of social situations, his exact speech pattern, and other subtleties. Social situations can be challenging for people with ASD at times, and they may feel overwhelmed in crowded places. A reclusive man who

can methodically run the world is intimately portrayed in Wilson as feeling out of place among its populace (Danger, 2022).

However, in some cases, there are no concrete specifications from this Universe to precisely lead us to the way of ASD characters.

Yet, several circumstances seem to be extremely relevant. For instance, *Vision* is a synthazoid, and *Wanda* unintentionally constructed the environment that surrounds her. The two work together to appear normal in an environment from the 1950s, while they are continuously observing individuals around them to determine what social acts are acceptable. This can be another clue of the ASD representations and particular activity close to individuals on the spectrum, which is used, in order to operate in social situations. In addition, Reed Richards from *The Fantastic 4* is portrayed, as having ASD in the Marvel comics and is known as an autism-coded character, as well (Danger, 2022).

Needless to say, autism-coded characters are not always written in a way of perfect-reality representation of an individual with ASD, yet the connection with the ASD viewer can be so strong, that can grow into a parasocial interaction and then a valid parasocial relationship.

The character of *Luna Lovegood* in the *Harry Potter* series is a perfect example of some of the strengths of an ASD personality, and the way her friends accept her is a great example of how to treat others who may seem a bit different. There are even several hints that can be applied from the character to ASD that are based on good character traits (Nathan, 2012):

1. The results of one's solitude in thought show one's propensity for seclusion in an effort to block out all of the sensory information that comes at them from every direction and the deliberate effort required to engage in the give-and-take of social interaction.

2. Observing options and following patterns. Seeing possibilities that others might overlook, or, to put it another way, "thinking outside the box".

3. A lack that most of the pretense originates from the belief that human interaction depends on very subtle cues and unwritten rules that people just seem to know, which frequently makes it difficult for people with ASD to interact on that level. This is portrayed as an inferior quality, because it can cause misunderstandings.

4. Actions and words are chosen deliberately and carefully, even though the first idea is not expressed in an original way, but for individuals with ASD, it actually takes a bit of courage to reach out and speak a word of comfort. For Luna, it means she is putting others' concerns ahead of her own worries about being misinterpreted and that can be considered a positive trait.

5. Loyalty is mixed with enthusiasm. Individuals with ASD frequently exhibit an intense passion for the topics that captivate them. A subject they are passionate about can occupy them for hours as they read, reflect, and produce materials. At the very least, Luna seems to enjoy learning about magical beings like thestrals because she spends her free time with them. And according to J.K. Rowling, an author of the book, Luna pursues a career as a nature expert.

6. All, in all, Luna can stand as a proper representation of ASD persona.

It always comes with significant hardships to generalize about a diverse group of people with ASD and of course, Luna is fictional, but in these respects, there are plenty of reasons, why she can be described as "one of the representatives" and most importantly, as a good example to follow.

Despite the fact, that previously was stated a palette of different characters with possible ASD-coding, until this day, there are still only a few representations of ASD, while there is a present need to broaden this field, due to the *sense of coherence (SOC)* and societal support. In addition, comprehensibility, manageability, and meaningfulness are also significant parts of dispositional orientation or SOC, which enables individuals to manage stress in daily life, maintain good health, and stay well (Galletta et al., 2019).

Thus, the understanding, the flow of actions in the matter of their surroundings, makes an individual with ASD, better equipped to handle challenging life circumstances and situations, which requires a more profound understanding for overanalysing every part of the specific event and per consequens, reading social clues in a correct way.

3 THEORY OF MIND

Can be certain skills of Theory of Mind, triggered by the creation of Parasocial Interaction?

Overall, when we are trying to talk about deformation and cognitive abilities, we need to take into account also certain kinds of predispositions.

These types of predispositions associated with a person's better performance is emerging with a high capacity to extrapolate others' mental states (intentions and beliefs) from their outward behaviour and physical appearance, which can be allocated under the general term, *Theory of Mind (ToM)* (Ondobaka et al., 2017).

There has been an increased interest in the cognitive associations to the common sense ToM and since the early 1980s. Other people act in a certain way, because they have various mental states, such as intentions, desires, beliefs and hopes. These states also have contents. Therefore, contents are crucial in causing chosen behaviour, due to the ability to individuate these mental states (they can reveal a person's beliefs or desires, for instance) (Leslie, 2001).

Thinking about contents in the more insightful way of their own meaning seems to be only linked with the older age group of society, due to the complexity and holistic stigma around them.

However, it has been observed that even pre-schoolers treat these states-with-contents as causes of behaviour and attribute these kinds of mental states to other people. Such a theory of mind can be used and tracked in individuals with learning disabilities, as well, indicating that it is not a product of general intellectual ability (Leslie, 2001). Nevertheless, it is believed that several functionally specialized, yet connected, and occasionally overlapping brain networks, are the source of social processes, as a valid part of ToM. The degree to which various social processes are largely cognitive (or "rational") or affective (i.e., "emotional") might be thought of as one approach to conceptualize them. This distinction states that social affective processes include emotion perception,

empathy, and social emotions like guilt and shame, whereas social cognitive processes include theory of mind, self-referential processes, and moral reasoning. And so, different subregions of these structures underlie affective ToM (i.e., "I understand what you feel"), social cognitive ToM (i.e., "I understand your intentions"), as opposed to cognitive ToM (i.e., "I understand what you mean"). *The ventromedial prefrontal cortex (vmPFC), precuneus (PC),* and *temporo-parietal junction (TPJ)* are considered to represent core ToM regions and have been found to be activated across a wide range of different ToM tasks. For instance, the TPJ and vmPFC are more significant for cognitive ToM, whereas the PC and dorsal vmPFC may be more significant for affective ToM (Whittle et al., 2022). From a neuroscience perspective, TPJ is also essential to the idea of internal *false belief* images. Therefore, it's possible that this activation has nothing to do with beliefs and is simply related to thinking about people in general (Kanwisher, 2019).

Moreover, language development and false-belief understanding are strongly correlated, according to developmental studies. But the nature of this connection is still up for debate, in the sense, if language encourage the understanding of falsehoods, or if it merely provide a meaning for development, that might take place independently, albeit with a delayed timeframe. Adults, who learned a developing version of the language as children, exhibit few mental-state signs and no false-belief understanding. Thus, the acquisition of a mature theory of mind is driven more by language learning than by social experience (Trimmer et al., 2016). False belief concept could also be any mental inference, we draw about a person's hidden internal states (Kanwisher, 2019). The individual discovery and attempt linked with trying to decipher other mental internal states may seem, at a first sight very altruistic. In the end, we all need to survive in the societal unit and this component appears as a main key to this stated issue. But in another way, all of our mental internal representations cannot be described as an exact duplicate of other individuals, because of our imaginational distortion. All in all, the need of understanding others is overlapping with the need of

understanding ourselves, which makes the concept rather self-centred. But again, transformed social reality with prevalent sociability issues gives us another field of research questions, strictly applying to individuals with sociability deficits, deriving from their conditions.

3.1 Theory of Mind and its Involvement in Individuals with Autism Spectrum Disorder

In order to determine the age at which individuals can make inferences about the mindsets of others, Professor Uta Frith, developmental psychologist at the Institute of Cognitive Neuroscience at University College London, first became interested in ToM in the context of ASD. Her test was later modified by her and her colleagues. But they were using the well-known tale about Sally and Anne, two dolls, which create significant understanding difficulties within this group of individuals (Voyles Askham, 2022).

The ontological status of ASD and other neurological disorders, identified by behavioural indicators and primarily theorized within the fields of cognitive neuroscience and psychological paradigms, has been the subject of intense debate in recent decades. Such cognitive-behavioural discourses avoid addressing the enduring problem of relationality and interaction in the creation of a contentious and perpetually reconstructed social reality, produced through the agency of its "actors" (Milton, 2012).

In its simplicity, research about ToM in this area, has a specific set of advantages, which may play a role, as a sufficient explanation for everything. But the question is, if it is indeed applicable.

In certain cases, some researchers believe this and they even went so far as to claim, that it completely explained ASD. But gradually, it lost its appeal and was virtually forgotten. In its beginnings, around 1990, Baron-Cohen claimed, that autism's core characteristic of problems with the theory of mind is what leads to other social difficulties. He asserted that autism might be characterized as a

"cognitive condition of mind-blindness" as a result, and he later wrote the well-known book *Mindblindness* to assert his assumptions. Soon after, other researchers revealed a variety of indications suggesting children with ASD, differ in their comprehension of others' mental states: They are less likely to attribute "appropriate" emotions to pairs of animated triangles that act out a scene than their non-autistic peers, and those who pass basic theory of mind tests may still have difficulty interpreting non-literal speech, such as sarcasm. The individuals' spontaneous speech also contains relatively few phrases and words that denote mental states (Askham Voyles, 2022).

Yet, over the span of years, ToM has gained renewed interest from scientists, who claim that ToM is sufficient enough and those, who see significant gaps in it. Another aspect challenges the idea, that ASD is defined as a deficit in ToM, recasting such problems as a matter of reciprocity and mutuality (Milton, 2012). However, a growing body of research encourages a more complex examination of social skills of individuals with ASD. *The double empathy problem theory* contends, that communication breakdowns between individuals with ASD and neurotypical individuals are a result of both parties having difficulties to understand one another. This *double problem* casts doubt on established theories of ASD, that blame social difficulties in individuals with ASD for failed interactions. Assuming that individuals with ASD simply have a different way of communicating, rather than one that is inadequate, it also echoes the principles of neurodiversity. According to the researcher Damian Milton, lecturer in developmental and intellectual disabilities at the University of Kent in the United Kingdom, "as a theory, it matches autistic phenomenology coming from insider accounts". The theory's premise is that a communication breakdown can result from a mismatch between two people. Disconnects can happen on many different levels, ranging from conversational patterns to worldviews. The more distance there is between the two people, the harder it will be for them to communicate. In the case of ASD, a communication gap may exist between those with and without the condition because both individuals with ASD and those without the

condition have difficulty understanding one another. Therefore, assuming from this theory, there is a mutual issue. Conversations between ASD and neurotypical individuals may be hindered, for instance, by the inability to read the other person's facial expressions (Zamzow, 2021). Mentioned component of the correct way, how to interpret other person's facial expressions and gestures is in this concrete concept more than crucial, due to the importance of uninterrupted transmission of information. Considering this, we may come to the conclusion that imitation, even only within the limited possibility of individuals with ASD to duplicate and understand this part of everyday communication, has the implication to become a supportive element for the inclusive coexistence possible in society as it can be.

3.2 Mirroring Abilities of Individuals with Autism Spectrum Disorder

One of the most significant findings in neuroscience is the existence of *mirror neurons*. They are a variety of visuospatial neurons that basically reveal information about social interaction amongst humans. In essence, mirror neurons react to behaviours, we see in others. The intriguing thing is that, when we perform that activity ourselves, mirror neurons also respond in the same manner. They are in charge of many other complex human behaviours and mental processes in addition to imitation. Thus, ASD and other conditions have been linked to defects in the mirror neuron system (Acharya & Shukla, 2012).

It is not simple to come up with a definition of a mirroring process, even given the definitions of mirror neurons and mirror systems. Any time a mirror neuron or mirror system discharges or is again activated, and so, one cannot say that a mirroring process is taking place. This is not a mirroring event, when a mirror neuron or system is endogenously activated. There is only a mirroring process, when a mirror neuron or system is engaged in the observation mode, defines as a genuine behavioural manifestation, expression of an endogenous mirror event, which must be seen by the observer. Even though the imitation is not a true expression or sign of an endogenous mirror event, the process in the observer is

still mirroring, if a good imitation of a painful expression causes the observer's pain mirror neuron to fire (Goldman, 2009).

From this point of view, we can grasp imitation as a reflection of a real event, deriving from the need to understand. Furthermore, it would be incorrect to state that every nonendogenous mirror neuron or mirror system activation constitutes a mirroring process. Imagination-generated activation is a significant non-endogenous mode of activation (Goldman, 2009). Mirroring is a social interaction, because it frequently involves the interpersonal matching or reproduction of a cognitive or mental experience. Although observers' activations are typically at a lower level than endogenous ones, frequently below the threshold of consciousness, it involves two people having the same mental-state type. Coming from this described ground of understanding, there is compelling evidence that mirror systems are essential for empathy and imitation (Chaminade et al., 2005).

Another big field of these kinds of representations, where empathy and imitation play the main role, can be found in *Korean Pop Music (K-POP)*, due to its wide palette of idols, who are sometimes compared with the neurodiversity phenomenon. Of course, it does not apply to every kind of idol, but for the faithful fan, it is easy to follow specific traits of his or her favourite persona.

On the other hand, there is no implication, that all of the individuals from fandoms are looking for these traits or are identifying with these traits, but the first criteria for being as mentioned faithful individual, requires high-level of devotion, which can overlap with the symptoms of ASD. Devotion, itself is often connected with music field, while there is an applicable pattern of fan and artist (in our case selected persona). There has been an evidence, directing us to the possible assumption, that, this described K-POP field can be used as a mediator between these two entities (devoted individual, in our case with ASD and selected persona), bringing an easement to the individual with ASD, while functioning as a tool, that can ease anxiety-provoking circumstances (Bethan, 2019).

In this case, even though the fact, that we are not able to find a specific valid link between ASD persona from the K-POP field and ASD devoted individuals,

there is an assumption, that mentioned profound state of devotion can lead them into imitation mode on an unconscious level, which makes the process of learning simpler and less complicated for them, who see socialisation as a personal struggle connected with uncomfortable feelings.

4 EMPATHY

Can be certain Empathy mechanisms, triggered by the creation of Parasocial Interaction?

Empathy facilitates the sharing of experiences, needs, and desires between people and acts as an emotional link that encourages pro-social behaviour, playing a crucial interpersonal and societal role. This ability, which calls for an exquisite interplay of neural networks, enables the individuals to recognize their own emotions from those of others, to resonate with them emotionally and cognitively, to understand their perspective, and to distinguish between own emotions and those of others (Riess, 2017). People can sense others' emotional states through a variety of mechanisms, but it is not entirely clear, how can they use this knowledge to predict others' future states (Thornton & Tamir, 2017). In other words, they implicitly predict their emotional responses to these events in the same way that they implicitly predict upcoming events (Celestine, 2021).

Researchers from Harvard University and Princeton University found that, participants in their study had fairly accurate mental models of emotional transitions when comparing their assessments of how likely they thought their own transitions would be to those of others. These models might make it possible for perceivers to accurately forecast the emotions of others up to two transitions in advance. They also identified variables that influence these mental models, but do not entirely determine them (Thornton & Tamir, 2017):

- egocentric bias
- the conceptual properties of valence
- social impact
- rationality
- similarity and co-occurrence between different emotions

These metal models are creating a space, where we can merge different factors, involved in upcoming events, as well as relations to desired emotional predictions. Affective forecasting is the process of foreseeing our future emotions in this way. And affective forecasting is essential for controlling our expectations, encouraging us to anticipate the positive outcomes, and encouraging us to prepare for the worst (Celestine, 2021). Expectations are then generally joined with our inner desires and planning for the worse can be seen as the first sign of *preventive repression*. The study of affective forecasting emerged from related research on decision-making by Kahneman and Snell (Kahneman & Snell, 1992). Thus, this area of research can be navigating for our unconscious actions, regarding PSI. There is also a possibility to draw a distinction between the previously mentioned traditional forecasting and a method known as hedonic forecasting, which deals with implicit or explicit predictions of utility that will be felt at a later time (Polyportis, Kokkinaki, Horvath, & Christopoulos, 2020). This kind of utility shows real-time interference of PSI into the true waters of reality, in its first stage of distortion. And these desires with their fantasy origin start to merge with an individual's ability to forecast, what might happen later in the future.

4.1 Validity of Emotions in the Context of Thinking

Emotions are undoubtedly an inseparable part of the thinking processes, in every case of their occurrence. Whether individuals can consciously admit their influence on them or not, they are interfering with the clear demand for objective thinking, which is often called straight.

Robert Henry Thouless, a British psychologist who has dedicated his strengths to enlighten this topic, claims that it is not necessary for an individual with crooked thinking to make the fundamentally dishonest claim and that an individual is a model of straight thinking, just as it is possible to find some significant flaws in reasoning in every aspect of the life, including this one (Thouless, 1953). But observing and following others can lead us to the concept of biases, linked with the many ways of individual thoughts' pathways.

For instance, present bias is an example of cognitive bias, which is a group of flawed assumptions that appear to be hardwired into the human brain, while the collection is sizable. In general, there are more than 185 items on the list of *cognitive biases*, ranging from the actor-observer bias (the tendency for explanations of other people's behaviours to overemphasize the influence of their personality and underemphasize the influence of their situation and for explanations of one's own behaviours to do the opposite) to the *Zeigarnik effect* (the tendency for incomplete or interrupted tasks to be remembered better than completed ones) to the aforementioned biases (Yagoda, 2018).

Therefore, it is more than misleading, to think that the ways of thinking cannot be faulty even if the attempt to subconsciously avoid this hurtful truth is still present, because, in complexity with the emotions, there is no way to hide away from their direct impact on own reasoning ability.

4.2 Understanding of the Internal States of Others in the Case of Individuals with Autism Spectrum Disorder

Can we consider the neurotypical society emotionally equal in every aspect of the EQ in general? There are still some differences, but there is a general agreement, that in the case of neurotypical individuals, it is never in such a difficult state, as we can find in individuals with ASD.

Additionally, the understanding of brain function in ASD, depends heavily on individual differences. Particularly, the degree of anxiety in the individuals with ASD may have an impact on the amygdala findings, which might predominantly have a particular consequences, on how the social functions of the amygdala are understood. On the other hand, current research emphasizes the significance of attentional mechanisms in the investigation of emotion systems in ASD. When given the chance, individuals with ASD and high anxiety levels may be more likely to steer clear of a visual display's most potent affective information (Mazefsky et al., 2013). While it is generally agreed in the literature, that individuals with ASD have difficulties with cognitive empathy, much less is known about how they process emotional empathy (Trimmer et al., 2016).

Emotional empathy also correlates with the general view of society, which is not always formulated correctly. The way people see those with ASD is that they do not want to be around other people. That is not correct in a way, that, the truth about these individuals is they want, what everyone else wants, but they are sometimes misguided and do not know how to connect with others. Negative experiences, such as bullying can lead to a future, full of scare and uncertainty, so there is no natural will and need to grow up (Williams, 2016). As it was indicated, there is a persistent misconception that people with ASD are emotionally insensitive and lack empathy. It is true, that a lot of individuals with ASD do not express emotion in ways that neurotypical individuals would notice. However, it is incorrect to assume that people with ASD typically lack empathy and are unable to identify feelings. Having such an opinion may cloud our

understanding of these people and delay the start of effective treatments (Brewer et al., 2016).

Accordingly, Baron-Cohen, who later revised his mentioned *Theory of Mindblindness*, proposed that the ToM is merely a smaller component of empathy, as a whole. He suggested, that there is an imbalance between *systemizing* and *empathizing*, or the capacity to comprehend how systems, as opposed to people, function, in ASD. Individuals with ASD are not heartless and unfortunately, this message has occasionally been misunderstood by the ASD community, because they may have difficulty reading emotions and mental states, but they still have other forms of empathy. Moreover, individuals with ASD and negative stereotypes about ASD are a result of the notion that these individuals lack the ability to feel as others, due to their overload of emotional stimuli (Baron-Cohen, 2002).

It may seem that this overload of emotional stimuli can create a burden for individuals with ASD, as well as for the neurotypical population, which is trying to nurture own PSI. But the evidence that the experience of PSI varies depending on message characteristics (such as the media figure's mode of address) and individual differences in cognitive empathy (such as perspective-taking) is based on this distinction (Cummins & Cui, 2014).

Therefore, choosing process of a suitable persona for an individual with ASD has a strong potential to evolve into many different forms of cognitive empathy with very promising progress in the field of social co-existence.

EMPIRICAL PART

The empirical section of the thesis is covered in the following chapters. Firstly, *5.1 Research Objectives, Research Questions and Hypotheses* will be established and stated, while following the description of participants and then methods and scoring systems, which were used to achieve them. Additionally, the reader will have a chance to dive into the research's findings, linked with adequate explanations, after the next subchapter. Finally, the discussion will be supported by specific limitations, originating from our research attempts and last but not least, connections and influences on various fields of domains will be highlighted, in order to receive more recognition of this topic between broader circles of society, in general.

5 Research Problem

Individuals with ASD often have a wide palette of coping strategies, prepared for situations linked with melt-down or other negative triggers of their stereotypical behaviour. The pursuit of their special interests is another example of a potential coping mechanism. The paradox that some individuals with ASD exhibit extraordinary abilities in the fields of art, music, and science, seems to imply that ASD is not only compatible with creative imagination, but in some sense promotes or facilitates it (Visuri, 2019), which offers to us a significant justification for the development of PSI.

Therefore, our research problem, in the higher sense of aim and hypotheses, was suitably formulated, on the basis of theoretical findings studied from the available literature, followingly based on the above-mentioned issue, which does not border only on ASD itself, but also intervenes with other areas, that are part of everyday life of the individual (whether ASD or neurotypical one) in a society.

5.1 Research Objectives, Research Questions and Hypotheses

One possible outcome of the creation of such an interaction, namely PSI, is that an individual can experience a certain discrepancy between reality and imagination. Overall, when we are trying to talk about deformation and cognitive abilities, we need to take into account also certain kinds of predispositions. The inseparable element of impacting others is creating a different type of reality, supported by an individual's imagination and PSI, which then an individual may or may not separate from the real perception of reality. Our research interest, regarding this topic is hidden in the PSI concept and its possible positive involvement in the progress and healthy development of individuals with ASD. In the end, there is still plenty of aspects, that are necessary to investigate in future research, regarding the separation itself.

We recognize, that it is important to take ASD's complexity seriously. In the first chapters of the theoretical part, we have tried to explain the essence, the origin and all of the other phenomena linked with it, such as empathy, as well as ToM. Furthermore, the influence of parasocial interaction is dissected from different perspectives and views. Since the possibilities, offered through the current time, are for individuals with ASD still quite limited, we have tried to verify the logical assumption that, if individuals suffer from these unpleasant sensory experiences or overwhelming conversational gestures or facial reading misunderstandings, they would be keener to create a specific PSI, to enforce a certain safety net, in case of an unwanted condition occurs.

Therefore the aim of our research was to find out, whether PSI can be considered a valid factor in groups with ASD. Thus, it can therefore be concluded that there were concrete attempts to merge all of the listed components into one practical dimension.

The main research question is, whether there are links between PSI and the influence of distorted empathy and theory of mind within groups with ASD, which can be observed through implemented steps through administrated research methods. In addition, we are interested both in generalized findings and

concrete links between particular measures, included in *5.4 Research Results,* since they are unexplored.

Based on the overview of the phenomena, we came up with the following hypotheses:

H1: There is an association between ASD and PSI.

H2: There is an association between ASD and Theory of Mind while considering the overlapping effect of Empathy, during the stable influence from PSI.

H3: There are no major associations between PSI, specifically linked to ASD, due to the fact, that PSI is widely spread also in neurotypical society, although the connection with the ASD group might bring new therapeutic interventions, based on multiple variables, which allow the creation of specific connections.

Therefore, it is more than important that future empirical attempts in this kind of research will bring significant results, so these basic concepts will receive the chance to evolve and expand even more and support our learning interest with stronger arguments.

5.2 Participants

The complexity of mentioned testing methods, targeted for the group of young adults individuals with ASD will be processed through complex analysis, derived from our theoretical basis provided through previous chapters.

This study works with two groups divided according to following terms:

- Individuals with ASD
- Neurotypical Individuals

The second mentioned group, the neurotypical sample, was also created for the purpose of the control group, with the same provided testing environment and tools (more detailed description provided in *5.3 Research Methods and Assessments*), as it was in the case of individuals with ASD (Figure 6).

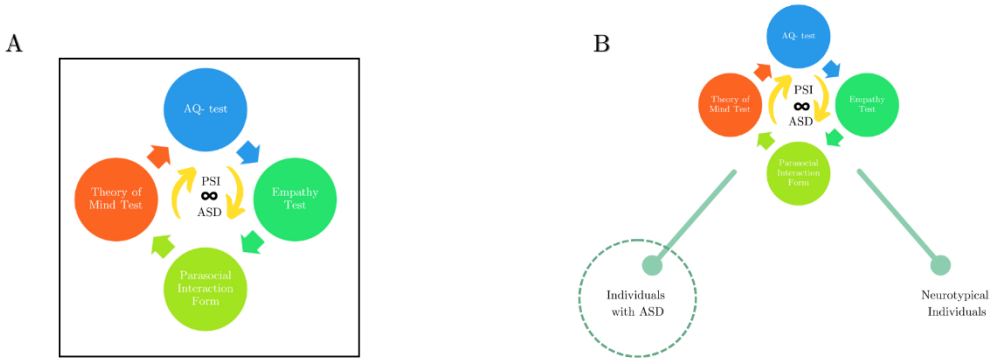

Figure 6: Division of Used Participant's Groups

Note. **A)** Four types of questionnaires (Autism Spectrum Quotient Test, Empathy Quotient, Reading the Mind in the Eyes Test and Parasocial Interaction Questionnaire). **B)** Participant's Groups (Individuals with ASD, Neurotypical Individuals). Created based on *Research Methods and Assessments* of this work; with Canva.com: https://ibb.co/b1vxhgC.

The study design was in total conducted on 43 participants. The split of participants by groups was balanced in the following way: 21 from a group with ASD, and 22 from the neurotypical group. The final amount was regarded as a very narrow interpretation of the current situation, deriving from the diagnostical environment for young adults, also mentioned in *6.1 Limitations*. Participants were young people with a mean age of ~27 years (ASD group) with the standard deviation 3,71 and ~25 years (NT group) with the standard deviation 3,15.

Exclusion criteria were set for the participants, who did not complete all of the four questionnaires or for those, who only participated in the saliva sample process, the results of which could not be provable, precisely because of the low number of participants. A more detailed description of the research sample is available in Figure 7 and Figure 8.

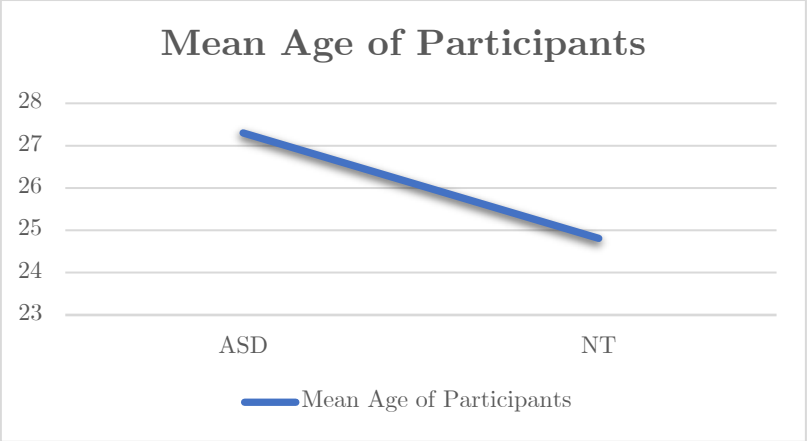

Figure 7: Distribution of Participant's Age

Note.(Groups: ASD- Autistic Spectrum Disorder, NT- Neurotypical)

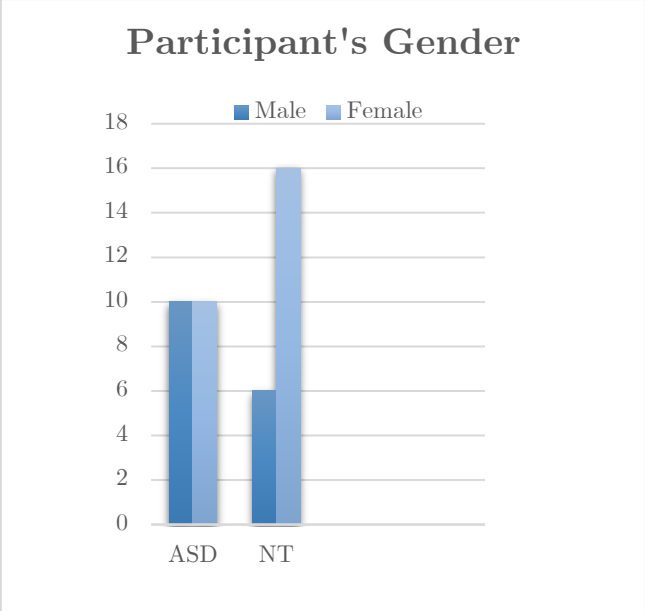

Figure 8: Distribution of Participant's Gender

Note.(Groups: ASD- Autistic Spectrum Disorder, NT- Neurotypical)

5.3 Research Methods and Assessments

The process of deciphering the different effects of PSI on individuals with ASD was proceeding through four types of questionnaires (Autism Spectrum Quotient Test, Empathy Quotient, Reading the Mind in the Eyes Test and Parasocial

Interaction Questionnaire), and second part, obtaining saliva samples (mentioned also in *6.1 Limitations*), in order to preserve a holistic view of the mentioned research attempts.

Name of the Questionnaire	Abbreviation of the Questionnaire	Questions/ Statements	Appendix
Autism Spectrum Quotient Test	AQ	50 Questions	(Appendix A)
Empathy Quotient	EQ	60 Questions	(Appendix B)
Reading the Mind in the Eyes Test	RMET	36 Statements	(Appendix C)
Parasocial Interaction Questionnaire	PSI	3 Introductory Questions, 19 Main Questions	(Appendix D)

Table 1: Questionnaire's Details

Autism-Spectrum Quotient Test (AQ), Empathy Quotient (EQ) and Reading the Mind in the Eyes Test (RMET) are standardized tests adapted from the Autism Research Centre (ARC), which brings together scientists from the University of Cambridge conducting research into the causes of and interventions for autism.

Parasocial Interaction (PSI) Questionnaire is a standardized test adapted from the University of Antwerp. The original questionnaire, used in the process of research by Nathalie Claessens and Hilde Van den Bulck, had 13 items (Claessens & Van Den Bulck, 2015), which were also used in our research with specific changes regarding the generalizing our aim in the questions, coming from the field of *My Favourite Celebrity (MFC)* to *My Favourite Persona (MFP)* or *MOP* in the translation (Appendix D), which includes not only real people/celebrities but

also book's, game's or other fantasy characters). Therefore, the need of reformulating specific questions increased to the final number of 3 introductory questions and 19 main questions (22 items).

Furthermore, every single used questionnaire has a special code, in order to not get recognize the specific test's direction and research intention. Mentioned coding system was following:

Name of the Questionnaire	Coding System
AQ	OTS
EQ	ER
RMET	MO
PSI	ES

Table 2: Questionnaire's Coding System

List of official documents used during our research:

- *Document for prior informed consent* with signature requirements
- *Check List* for every participant for each task/questionnaire with the specific comment section
- *General Manual* with a description of every part of the study, to provide availability for future possible replication

Our research was created, based on our initial expectations, which were transmitted to the prepositions and later to the hypotheses, themselves, describing the hopefully positive impact of all four components from the testing package, more concretely Autism Spectrum Quotient Test, Empathy Quotient, Reading the Mind in the Eyes Test and Parasocial Interaction Questionnaire.

In the previous sections, we have already mentioned possible improvements in their social circles, therefore we tend to believe, that our hypotheses would be valid and depicted as meaningful, while taking into account that stated research topic may become a part of a revolutionary phenomenon, that is currently pushing boundaries of different fields, linked with interdisciplinary research.

5.3.1 Scoring of Autism Spectrum Quotient Test

Scoring criteria of this specific AQ test (Appendix A), involved range from 0-50, while working with the assumption, that scores 26 or greater, indicate that an individual might receive results linked with ASD, while lower scores mean, that an individual is not likely linked with it (Engelbrecht, 2020). From two possible ways of concluding the data, automated-scoring, as well as self-scoring were possible, and thus, we have used the second one for the manual calculation of the score (WIRED, 2012):

Answers	Numbers of Questions	Point
Definitely Agree or Slightly Agree	2, 4, 5, 6, 7, 9, 12, 13, 16, 18, 19, 20, 21, 22, 23, 26, 33, 35, 39, 41, 42, 43, 45, 46	1
Definitely Disagree or Slightly Disagree	1, 3, 8, 10, 11, 14, 15, 17, 24, 25, 27, 28, 29, 30, 31, 32, 34, 36, 37, 38, 40, 44, 47, 48, 49, 50	1
© MRC-SBC/SJW February 1998. Published: Journal of Autism and Developmental Disorders, 31, 5-17 (2001)		

Table 3: Scoring Table for Autism Spectrum Quotient Test

5.3.2 Scoring of Empathy Quotient

The *EQ* consists of 60 statements, from these, 40 statements on empathy, and 20 filler statements while giving to each participant four of the total number of offered choices for each statement (Engelbrecht, 2022a):

Answers	Points
Definitely Agree	2
Slightly Agree	1
Slightly Disagree	1
Definitely Disagree	2
Filler Statements	2, 5, 7, 9, 13, 16, 17, 20, 23, 24, 30, 31, 33, 40, 45, 47, 51, 53, 56
Points	0

Table 4: Scoring Table for Empathy Quotient

5.3.3 Scoring of Reading the Mind in the Eyes Test

The Reading the Mind in the Eyes Test consists of 36 photographs, while giving the participant four of the total number of offered choices, taking into account the ability to complete the task as quickly as possible and their individual processing style (Engelbrecht, 2022b).

In addition, before actually filling out the questionnaire, an exemplary picture was presented to them, supported by the following introduction (Engelbrecht, 2022b):

"Choose the word that best captures what the person in the image is thinking or feeling for each set of eyes. You might think more than one word applies, but pick the one you think is the most appropriate. Make sure you have read all four of them before making your decision. Since both, your accuracy and the amount of time it takes you will be graded, try to complete the task quickly and accurately."

Considering neurotypical individuals might have an intuitive style because there is an assumption, they typically respond that they just knew, what the expression was when we ask them, how they came up with the answers. On the other hand, systematizing style is more prevalent in the group with ASD, because when we ask them about the answers, they will usually say that they have chosen them, based on their knowledge of facial expressions, implementing a guessing game or a process of elimination. The answers were compared with correct responses, based on Table 5, in which are the correct ones highlighted and identified with a black star (★) in the table below (Engelbrecht, 2022b):

ITEM	Option 1	Option 2	Option 3	Option 4
P	Jealous	panicked ★	arrogant	hateful
1	playful ★	comforting	irritated	bored
2	terrified	upset ★	arrogant	annoyed
3	joking	flustered	desire ★	convinced
4	joking	insisting ★	amused	relaxed
5	irritated	sarcastic	worried ★	friendly
6	aghast	fantasizing ★	impatient	alarmed
7	apologetic	friendly	uneasy ★	dispirited
8	despondent ★	relieved	shy	excited
9	annoyed	hostile	horried	preoccupied ★
10	cautious ★	insisting	bored	aghast
11	terrified	amused	regretful ★	flirtatious
12	indifferent	embarrassed	sceptical ★	dispirited
13	decisive	anticipating ★	threatening	shy
14	irritated	disappointed	depressed	accusing ★
15	contemplative ★	flustered	encouraging	amused
16	irritated	thoughtful ★	encouraging	sympathetic
17	doubtful ★	affectionate	playful	aghast
18	decisive ★	amused	aghast	bored
19	arrogant	grateful	sarcastic	tentative ★
20	dominant	friendly ★	guilty	horrified
21	embarrassed	fantasizing ★	confused	panicked
22	preoccupied ★	grateful	insisting	imploring
23	contented	apologetic	defiant ★	curious
24	pensive ★	irritated	excited	hostile
25	panicked	incredulous	despondent	interested ★
26	alarmed	shy	hostile ★	anxious

27	joking	cautious ★	arrogant	reassuring
28	interested ★	joking	affectionate	contented
29	impatient	aghast	irritated	reflective ★
30	grateful	flirtatious ★	hostile	disappointed
31	ashamed	confident ★	joking	dispirited
32	serious ★	ashamed	bewildered	alarmed
33	embarrassed	guilty	fantasizing	concerned ★
34	aghast	baffled	distrustful ★	terrified
35	puzzled	nervous ★	insisting	contemplative
36	ashamed	nervous	suspicious ★	indecisive

Table 5: Scoring Table for Reading the Mind in the Eyes Test

Note. Adapted from "Reading the Mind in the Eyes: Test revised version: a study with normal adults, and adults with Asperger syndrome or high-functioning autism," S. Baron-Cohen Wheelwright S, J. Hill, Y. Raste, I. Plumb, 2001, J Child Psychol Psychiatry. 2001 Feb;42(2):241-51. Copyright 2021 by the Association for Child Psychology and Psychiatry.

5.3.4 Scoring of and Parasocial Interaction Questionnaire

In the case of *Parasocial Interaction (PSI) Questionnaire*, standardized test adapted from University of Antwerp, was also used in our study, with a few modifications to better suit the generalization of our objectives (Appendix D), which includes not only real people/celebrities (Claessens & Van Den Bulck, 2015):

Table 2: The PSR scale.

Nr.	Item	Mean	*SD*	Emotional connection	Analogy to social relationships
1.	When something bad happens to MFC, I feel bad.	3.09	1.13	.793	−.031
2.	When something bad about MFC appears in the media, I feel hurt.	2.85	1.13	.723	.069
3.	When my friends laugh at MFC, I feel hurt.	2.74	1.17	.682	.049
4.	I learn from the acts of MFC.	3.06	1.06	.660	.016
5.	I often have the same point of view as MFC.	3.16	.93	.654	−.042
6.	I can empathize with the emotions of MFC.	3.37	1.05	.638	.021
7.	MFC is like a family member to me.	1.96	1.00	.007	.837
8.	I talk about MFC like I talk about my friends.	2.16	1.09	−.005	.824
9.	I feel connected to MFC as I do to my friends.	2.17	1.09	.084	.786
10.	Being able to follow MFC on Facebook or Twitter makes me feel close to him/her.	2.10	1.06	−.081	.727
11.	I have tried to get in contact with MFC.	1.77	1.07	−.053	.647
12.	I believe it is important to know everything about MFC.	2.52	1.17	.145	.641
13.	Sometimes I actively search for information on MFC.	2.75	1.28	.131	.505

Note: Principal factor analysis (Direct OBLIMIN); MFC: My favorite celebrity.

Table 6: Scoring Template with Mean for Parasocial Interaction Questionnaire

Note. Reprinted from "Parasocial relationships with audiences' favourite celebrities: The role of audience and celebrity characteristics in a representative Flemish sample," by N. Claessens, and H. Van den Bulck. 2015, Journal Communications vol. 40, no. 1, pp. 43-65. Copyright 2015 by the University of Antwerp.

In our case of scoring, only the mean was adapted from the mentioned study, while additional questions were mentioned in the *Discussion*, and incorporated to other resulting data, supporting our study.

5.4 Research Results

The data, used to support this thesis were collected under the *APVV* grant, and completed during the professional supervision and collaboration of Prof. MUDr. Daniela Ostatníková, Mgr. Hana Celušáková, PhD., Mgr. Katarína Polónyiová and RNDr. Jaroslava Babková, PhD. from the *Academic Research Centre for Autism (ACVA/ARCA),* with its main focus on the integration of the research activity, directed at autism spectrum disorders in Slovakia, under the wings of the Institute of Physiology, Faculty of Medicine, Comenius University in Bratislava.

This chapter provides a detailed description and explanation of the study design, tested through:

- Independent T-Test
- Correlation Matrix

The Independent T-Test, also known as the two-sample, independent, or student's t-test, is an inferential statistical test that determines, whether there is a statistically significant difference between the means in two unrelated groups, also referred to as unpaired groups or independent groups—are groups where the cases (i.e., participants) in each group, are distinct from one another, for purpose of comparing two groups. Therefore, an individual from one group cannot also be a member of the other group (Kim, 2019), which is also our case with a group of individuals with ASD and NT's individuals, reframed as a control group.

The correlation Matrix is based on the Pearson correlation coefficient, while the Application of a correlation matrix, can originate from three specific possibilities for implementation to the received data (Spiga et al., 2020). Our case has the purpose to summarize an extensive amount of data from all of the described questionnaires, where the goal is to see patterns.

Statistical analysis was conducted using *jamovi* (version 2.3.21). Jamovi can import data that has been entered into a spreadsheet interface, while in case of implementation when changes are made to the raw data, the software's analyses are automatically updated to reflect those changes (Doğan Şahin & Can Aybek, 2020) and the dataset was first obtained in through online questionnaires built in JotForm (JotForm, 2006). Particular statistical analysis of each measure is described through mentioned Independent T-Test and Correlation Matrix. But firstly, we analyzed received data, based on scoring systems, which support assumed differences between *ASD individuals* and *neurotypical (NT)* ones, also labelled as *Control Group:*

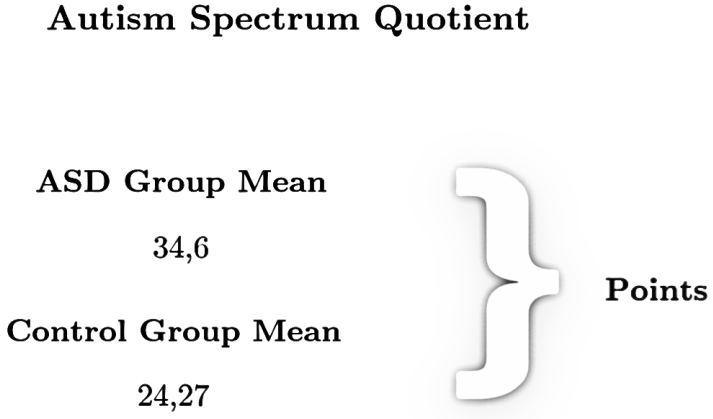

Figure 8: Autism-Spectrum Quotient (AQ) Mean

Note. Groups: ASD- Autistic Spectrum Disorder, NT- Neurotypical, while 79.3% of participants with ASD score 32 or higher[1]

In the second step, we have used Independent T-Tests, in the following fashion:

Independent Samples T-Test

		Statistic	Df	p	Mean difference	SE difference		Effect Size
Final	Student's t	4.78	40.0	< .001	10.3	2.16	Cohen's d	1.48

Note. H_a $\mu_{ASD} \neq \mu_{NT}$

[1] (Baron-Cohen et al., 2006)

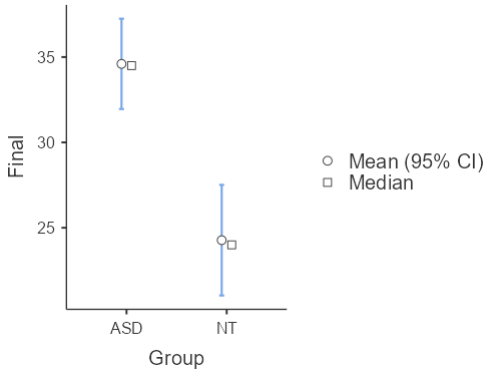

Figure 9: Independent Samples T-Test- AQ: ASD & NT

Independent Samples T-Test

		Statistic	Df	p	Mean difference	SE difference		Effect Size
Final	Student's t	-1.55	40.0	0.130	-4.58	2.96	Cohen's d	-0.478

Note. H_a $\mu_{ASD} \neq \mu_{NT}$

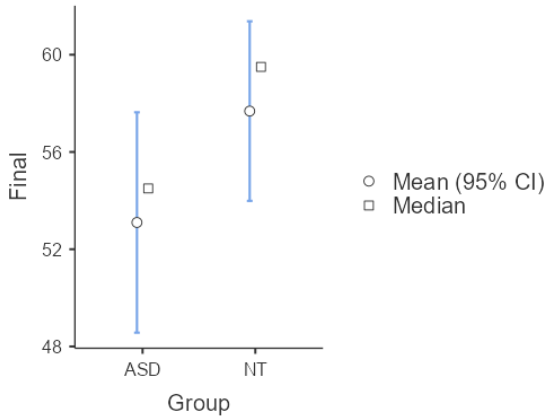

Figure 10: Independent T-Test's Plots- EQ: ASD & NT

Independent Samples T-Test

		Statistic	Df	P	Mean difference	SE difference		Effect Size
Final	Student's t	-2.56	39.0	0.014	-3.23	1.26	Cohen's d	-0.801

Note. H_a $\mu_{ASD} \neq \mu_{NT}$

Independent Samples T-Test

		Statistic	Df	P	Mean difference	SE difference		Effect Size

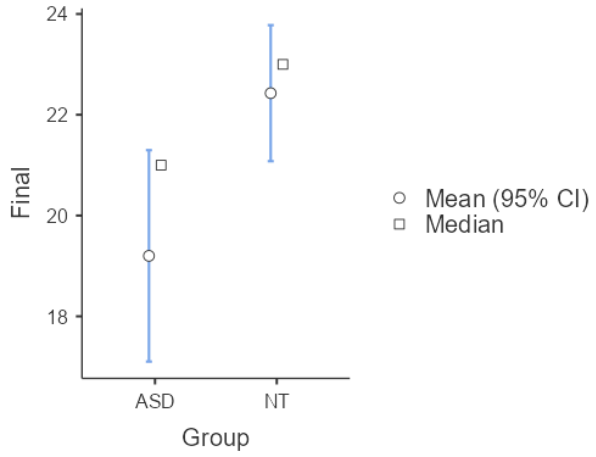

Figure 11: Independent T-Test's Plots- RMET: ASD & NT

Independent Samples T-Test

		Statistic	df	P	Mean difference	SE difference		Effect Size
Final	Student's t	-1.93 [a]	40.0	0.061	-0.433	0.224	Cohen's d	-0.597

Note. H_a $\mu_{ASD} \neq \mu_{NT}$

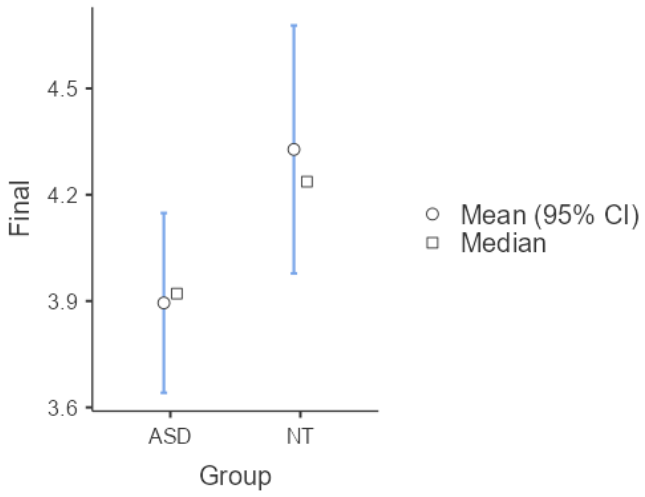

Figure 12: Independent T-Test's Plots- PSI Questionnaire: ASD & NT

Participants were assigned either to ASD or NT group. In both conditions, they were asked to fill out the AQ questionnaire. The difference between tested groups was statistically significant, in a stated points t(40) = 4.48, p <.001, d = 1.48, then with EQ t(40) = -1.55, p = 0.130, d = -0.48, RMET t(39) = -2.56, p = 0.014, d = -0.80 PSI Questionnaire t(40) = -1.93, p = 0.061, d = -0.60. Based on Figures 9-12, mentioned above the results were notable (AQ & RMET), but not enough striking (PSI), which can be linked to the size of the tested group, labelled as our main limitation, but also we can hypothesise that slight differences between tested groups are partially supporting our third hypotheses.

And last, but not the least, Correlational Matrix:

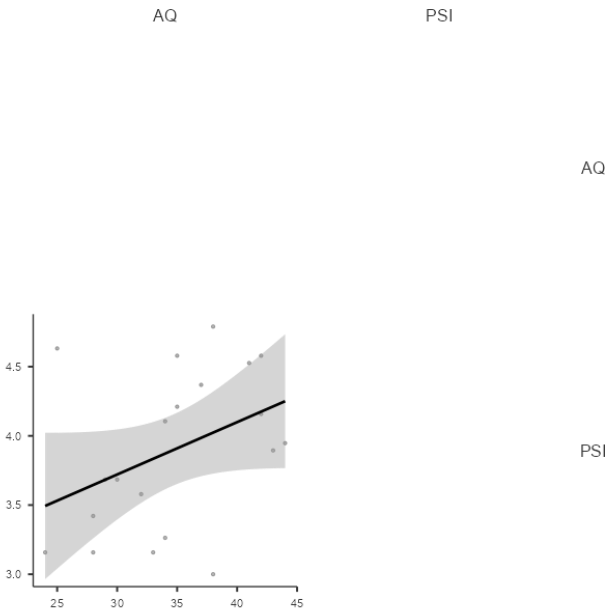

Figure 13: Correlation Matrix: AQ & PSI- ASD Group

There was a moderate correlation (Fig. 13), between AQ and PSI questionnaire, while looking at the ASD group, rs (43) = 0.395, p = 0.085, which only slightly navigates our evidence towards our first hypothesis, dealing with the connection between ASD's individuals and their parasocial interactions.

The second hypothesis was attempted to explain also through this selected statistical method:

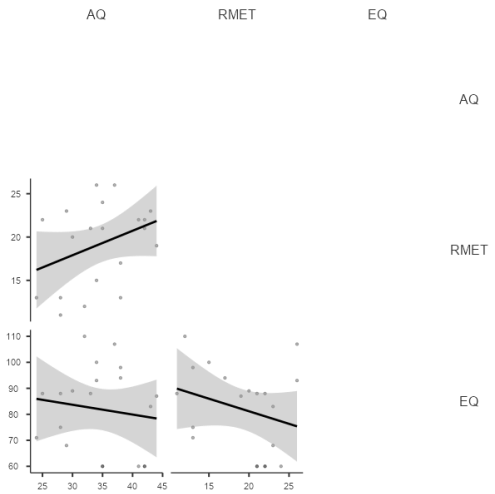

Figure 14: Correlation Matrix: AQ & EQ & RMET: ASD Group

There was a moderate correlation (Fig. 14), within the connection of AQ and RMET, but statistically unsubstantiated, with rs (43) = 0.355, p = 0.123, but a rather negligible negative correlation linked with EQ, rs (43) = - 0.137, p = - 0.279, reflected inside limit r < .10, according to Cohen's benchmarks for interpreting correlation effect size, while looking at the ASD group. Therefore, the first finding between AQ and RMET, in the dimension of ASD and Theory of Mind, resulting from hypothesis number one was marginally supported, (although not statistically), and its second part, which included EQ, was negligible, therefore our hypothesis was not fully supported, only partially.

6 Discussion

Human-beings shape own identities over the course of their lives. The qualities that a person believes are essential to who they are. These can include things like our understanding of who they are, through gender, sexuality, race, religion, and interests, skills, and beliefs. These identities are made up of their personalities, experiences, values, ambitions, thoughts, and beliefs, and they change over the course the lives. They also can better understand why they think, feel, and behave the way they do if they have a strong sense of who they are (Webber et al., 2022).

Of course, it can be challenging to define the identities at times. Especially in the case of individuals with ASD, who have specific problems in the field of ToM, as well as empathy *(Subchapters: 3.1, 3.2, 4.1, 4.2).* Considering, other aspect linked with young adults, we frequently put them on a "journey of discovery" to better understand, who they are. That was also one of the reasons, why we have chosen to focus on this particular age group, investigated under the influence of PSI. From that point of view, we can describe our target individuals on the boarders between childhood, (which is often intertwined with PSI personal, due to significant widening of individual's imaginative world) and adulthood, (which is difficult period for entering the world of new understanding and responsibilities, resulted in even more higher portion of hardships for ones with ASD, than neurotypical ones).

These factors are also reflected and partially confirmed in our research, which supported our assumption, that having a PSI can be more than advantageous for individual with specific deficits, which is exactly the case of ASD. Also, taking into an account, that our work was a pilot study, we are aware of numerous restrictions, namely constraint in the sample size, complexity of the questionnaires and the mental disturbance, like tiredness and lack of proper attention, linked with them and most of all, the inability to find increased number of participants, who would fully agree on the part of obtaining saliva samples *(mentioned in 6.1 Limitations).* Additionally, a mix of genders in the selected groups, as well as, uneven numbers of both genders in groups, created a crooked

ground for further investigations in various fields, while one of them is *masking*. Thus, there is an assumption that female groups with ASD may be better at hiding their deviations (more likely to engage in camouflaging or masking) from neurotypical behaviours than in male groups with ASD. If so, when these individuals camouflage, they conceal any characteristics or behaviours that might give them away as being unique. Therefore, it may be harder for specialists, and other people to recognize female's differences, because they are more likely to imitate those around them (Schuck et al., 2019). On the other hand, our study reveals important aspects, in the context of additional questions through PSI (ES) questionnaire (Appendix D), which have suggested the importance of such interaction, not only within the imaginary space with one selected persona, but with multiple ones, even at the same time, proving our initial research point.

When hypothesizing about ASD and PSI are associated with one another, we discover a supporting base for such a claim, while given the overlapping impact of empathy and the consistent influence of PSI was found out, there is an association between ASD and Theory of Mind, but precisely with the AQ and RMET the differences seem to be relatively large, but not statistically significant and with the PSI it is almost statistically significant, in addition due to PSI's widespread prevalence in neurotypical society as well, there were not present any significant associations between PSI and ASD specifically, though the connection to the ASD group may lead to new therapeutic interventions based on multiple variables that enable the formation of specific connections, opening the door of possibility, while using PSI, which may allow everybody to "try on" different personas in make-believe settings in order to get a better idea of how they feel. Thus, they have the chance to change/feel/interact with the identity of a character for a while to experience, how it feels when they emotionally connect with them and become completely absorbed in an alternative world.

Research also suggests that for a brief period of time, the thoughts, emotions, and experiences of fictional characters can become a part of their new identities. These processes not only allow one to learn more about the true self, but they

also provide the ability to explore the elements, that make up these individual identities with the promotion of self-discovery and progress (which is in individuals with ASD, more than welcomed)(Webber et al., 2022).

Considering the fact, these processes have also prior superiority in the implementation, alone. Because, we would look into different types of therapies, which are currently offered to them, they have to share one big similar point and that is conscious influence. Being sentient and aware of all of the input coming from the external world is sometimes more there overwhelming. Therefore, choosing a safe and comfortable way of interacting with a specific persona (even in an alternation and modification under the supervisory advice from the psychologist), is significantly relieving and less pressuring, while not being aware of this friendship's influence.

This was also confirmed through our mentioned additional questions through PSI (ES) questionnaire (Appendix D), which were focused on *My favourite persona (MFP)*, including not only real people but also characters from books, games or other own fantasy characters, linked with their specific area of influence, name and significant time frame for the individual:

Area of MFP	Name of MFP (in Case of Specific Figure/s)	The Time Frame of Influence from MFP
Other	Peter Parker/ Spiderman	Situational
Other	General Representation of Various Individuals	Current
Other	Jackie Chan	Current
Music	Helen Fischer	Current
Music	The Weeknd	Current
Other	Nikola Tesla	Past
Music	Ariana Grande	Current

Music	Billie Eilish	Current
Other	Richard Feynman	Past
Other	Theodore Finch	Current
Other	Own Persona	Current
Other	General Representation of Various Individuals	Other
Other	Emma Morley	Other
Music	BTS	Current
Music	Gerard's Journey	Current
Other	Violet Markey	Current
Other	Lukas Masubo	Situational
Music	Jeon Jungkook	Current
Music	Nathan Byrn	Other
Other	General Representation of Various Individuals	Other
Other	General Representation of Various Individuals	Other
Music	Kim Namjoon	Current

*Figure 15: Neurotypical Individuals & Their MFPs**

**MFP-My favourite persona (includes not only real people but also characters from books, games or other/own fantasy characters)*

Area of MFP	*Name of MFP (in case of specific figure/s)*	*The Time Frame of Influence from MFP*
Other	Hulk	Situational
Music	Kim Taehyung/V	Current
Music	IU (singer) Super Mario	Current Past
Music	BTS	Current
Other	Iron Man/Tony Stark	Current
Other	Luna - Harry Potter Universe	Current
Music	GD	Current
Other	Spock	Past
Music	Park Jimin	Current
Sport	General Representation of Various Individuals	Current
Other	Grunkle Stan	Current
Music	Freddie Mercury	Past
Religion	Jesus	Current
Other	Hyoga	Current
Other	Forrest Gump	Past
Other	Own Persona - Andrea (formerly Justina)	Situational
Other	General Representation of Various Individuals	Other

Sport	Lewis Hamilton	Current
Other	Own Persona – Ludwig	Current
Other	Own Persona - Gilron	Current

*Figure 16: Individuals with ASD & Their MFPs**

**MFP-My favourite persona (includes not only real people but also characters from books, games or other/ own fantasy characters*

Additional Honourable Mentions:

(Data received through Check List's Comment Section, mentioned in the *5.3 Research Methods and Assessments*)

- Samved "Sam" Mukro (hobbit and one of the main characters of the Lord of the Rings fantasy trilogy) - Frodo Bublik's faithful companionship during the expedition to Mordor

Reasons for PSI:

-name similarity

-honest and brave characteristics, which are close to the heart of the participant

- Kylo Ren (a villain from the Star Wars series/son of Han Solo and Leia Organa and descendant of Darth Vader) - during the trilogy, he goes through a personal crisis and cannot decide whether to join the side of good or evil

Reasons for PSI:

-participant is often finding himself in some situations, where he can feel inner conflict with himself (just like mentioned MPF), especially during time for important decisions

-endless doubting of own choices, while fearing possible negative consequences

- Shrek (animated fairy tale character) - the green ogre

Reasons for PSI:

-participant is convinced that some people consider him a "monster", but in fact, he is funny, humble, understanding and last but not least, human (just like Shrek)

-participant's quote: "I am autistic, but I am also a human-being apart from that, just like anybody else."

- Moses (an animated character from the movie Prince of Egypt) – significant for a good brotherly relationship with Pharaoh, but it changes during the evolving story

Reasons for PSI:

-Moses is the type of man, who does not want to hurt his brother and tries to find a non-violent solution, similarly, the participant is always on a way, trying the correct possibility to approach others and find the common ground

-despite it is sometimes, indeed difficult to understand others, it creates a certain type of hardship for an individual, in case, if they are not able to acknowledge others

- Freddie Mercury (singer), Arnold Schwarzenegger (actor) - these personalities were able not only to surpass themselves but also to show the world that they have what it takes

Reasons for PSI:

-a wish to be brave and fearless just like them in various situations, with complicated escalation due to ASD

-J.R.R. Tolkien/Stephen King/Robert E. Howard/H. P. Lovecraft

(fantasy/horror genre's writers)

-Hans Zimmer (film music composer)

-Quentin Tarantino/Peter Jackson/Steven Spielberg/James Cameron (film directors) - these artists managed to captivate people with the help of imagination and fantasy

Reasons for PSI:

-participant's quote: "I have a huge imagination and I would like to express it somehow, therefore mentioned people inspire me in a sense of supporting my creativity and artistic spirit."

As we can see, according to results from Figures 15 and 16, we received data, supporting the influence of PSI, not only in the neurotypical group but also in individuals with ASD, as a conclusion for finding a relevant ground between ASD, Empathy and Theory of Mind (Appendix A, B, C). Although our hypotheses might not be fully supported from the statistical point of view, the variety and personal reasoning background for cultivating PSI, from the perspective of recipients, who devoted their lives to them, seems rather significant and convincing. Furthermore, the pallet of different areas, defined as the origin of these MFPs is indeed wide, intertwining all of the different fields (also mentioned in *2.3 Parasocial Interaction as Coping Mechanisms for Individuals with Autism Spectrum Disorder* and *3.2 Mirroring Abilities of Individuals with Autism Spectrum Disorder*), while their influence, itself, where classified as current, past, situational or other, deriving from the latest interest of the individuals.

The mixture was indeed flamboyant, but the most appearing field was linked with the movie, music and book industries.

According to study of Liebers and Schramm (also mentioned through *Table A1. The top-10 most chosen book characters*) and their concrete results about

favourites personas, these were following results (Liebers & Schramm, 2017), which are also overlapping with ours:

- Katniss Everdeen (The Hunger Games)
- Harry Potter (Harry Potter)
- Hermione Granger (Harry Potter)
- Tyrion Lannister (A Song of Ice and Fire)
- Daenerys Targaryen (A Song of Ice and Fire)
- Allan Karlsson (The Hundred-Year-Old Man Who Climbed Out the Window and Disappeared)
- Detective Kluftinger (Milchgeld/Seegrund)
- Christian Grey (Fifty Shades of Grey)
- Robert Langdon (Illuminati/Inferno)
- Elizabeth Bennet (Pride and Prejudice)

Thus, technology of this age, support individual's devotion to MFP, even in cases, if the selected character is only fictional or imaginary while creating different types of platforms, which can be labelled as main sources of additional information, captivating the individual in a never-ending loop of interest.

In order to explain the interest in selected MFPs, it is possible to present two compatible hypotheses. According to the *Learning Hypothesis*, interest in celebrity rumours is a by-product of an evolved mechanism beneficial for learning information relevant to fitness and survival. According to the *Parasocial Hypothesis*, this mechanism is diverted by MFP rumours, which causes people to mistakenly think that MFPs are members of their social network, while age was found to be a powerful predictor of interest in celebrities, providing evidence for the Learning Hypothesis. The Parasocial Hypothesis can be then partially supported by the fact that MFP interest can be significantly predicted by media exposure, but not by social isolation (De Backer et al., 2007). In general, there are numerous reasons, why an individual might form a parasocial attachment to a MFP.

An individual, for instance, might be going through something that a character is. Another explanation is that the character possesses qualities, they admire. Since it is common for people to identify with at least one fictional character in a work of media, it might be crucial for expressive arts therapists to discuss these connections with their patients (Gannon, 2018).

Thus, MFPs change their roles as friends and teachers throughout individual's lives (De Backer et al., 2007), while the potential of parasocial relationships is enormous as a part of the lives of many different individuals and can be a crucial subject to cover in therapeutic interventions (Gannon, 2018).

6.1 Limitations

The research methods of this study are quite complex and time-attention demanding, therefore we may suppose that there would be significant room for various types of limitations. One of the significant limitations is linked to the present danger of implying some specific ideas of the questionnaire's creator, in the meaning of a researcher, is always a very misleading pathway, that needs to be taken into account. Due to the fact, that every question might have a different effect on a selected participant, the results can be distorted, in the same fashion. Moreover, the physiological and psychological state of the participants can also strongly impact the finalized data, which may or may not reflect their opinions and pattern of behaviour.

On the other hand, there is an assumption, that postulated topic is not always welcomed in broader circles of society, therefore one might feel ashamed or not very keen to admit such an interaction. Of course, there is no will to admit it, and absolutely not in cases when we are talking about interaction in its maladaptive form.

Due to the fact that social media's 24-hour access to celebrities' private lives of many individuals has led to the emergence of these parasocial relationships on a dysfunctional level. Anyone can stalk and obsess over someone, which presents a serious threat to the victim's mental health. Parasocial relationships arise when people are repeatedly exposed to a media persona and the people develop a sense of intimacy, perceived friendship, and identification with the celebrity, according to a study done by Singapore Management University regarding intimate relationships between audiences and celebrities. This is a good example of how parasocial relationships develop. This method allows for a bridge to be opened between common people and celebrities by identifying them. Social media's overall influence on people is unsettling because it fosters an environment, where obsessive behaviours can flourish (Aguayo, 2021).

Apart from this maladaptive side of PSI and the stigma around it, there is a significant problem with the number of participants used in this research, strictly

linked to the ASD group, itself, due to the fact, that it is frequently difficult to assess an individual with ASD's cognitive abilities due to a lack of clinical experience, recommended procedures, and, particularly in Slovakia, the absence of suitable diagnostic techniques that are standardized for the Slovak population. The diagnostic process also requires evaluation of the child's developmental stage or intellectual capacity because the demands on the child's communication and social skills should take into account both his developmental stage and not just his chronological age (Celušáková et al., 2021). What is more, according to recent research, getting an autism diagnosis as an adult is typically prolonged, but relieving once one is made (De Broize et al., 2022).

Based on the facts mentioned above, our research is restricted and limited by the number of adult participants with ASD, who were willing to take part in these questionnaires, formulated in a difficult and challenging way, even for the neurotypical individuals, namely *Reading the Mind in the Eyes Test* (Appendix C). An additional factor was hidden in a time-consuming task, which was even more confusing and laborious for individuals with ASD, due to the fact, that they were checking their answers multiple times to make sure they answered in the correct way, even if they were reassured, that any answer, provided through the specific questionnaire would be considered as helpful.

All in all, even though, we had the chance to meet with young and very ambitious individuals with ASD, who were more than excited to be a part of a research, which has the potential to be another missing part, holding an answer to themselves, we still need to focus on the characteristic trait of theirs and that is *social anxiety*. Because individuals with ASD often find it challenging to perceive things from another person's point of view, it often results in severe states of social anxiety, while it might impede their ability to predict or comprehend another person's actions. This is because they are unable to grasp gestures and facial expressions. Their own feelings are similarly characterized by this problem with emotions (Tran et al., 2019). This might also lead to the conclusion, that if some individuals with ASD were part of the questionnaires, processed in a way

of declining the participation, the other voluntary part, including taking samples of their saliva was even harder to digest.

Of course, we were working with this assumption, which could also interfere with these kinds of hardship, but simultaneously, we believed, that it would enable the enrichment of our research with the analysis of possible biomarkers related to ASD or social deficits, that would be measured in the group of willing participants. Although, the relationship between salivary serotonin and empathy is still unknown, despite the fact that human saliva contains the monoamine serotonin, which is essential for the modulation of emotional states. There might be an assumption, derived from possibly linked relationships between salivary serotonin levels, trait empathy, and the sharing effect of emotions (that is, sharing emotional experiences with others)(Matsunaga et al., 2017).

This study is one of the few studies linking the ephemeral nature of parasocial interaction with ASD. Consideration of all the influences resulting from the diagnosis of ASD and PSI as an additional support mechanism may represent a major revolutionary factor in medicine, as well as other disciplines, such as cognitive science or psychology, even special education. Therefore, there is an positive that other related fields will be able to detect and preferably also adopt this approach, customizing PSI, as a justifiable tool, based on its main reason, indicating, that the development of PSI is presently the primary study avenue in interdisciplinary studies, and future research concentrating on the aforementioned provided issues should also embrace this method in light of the potential long-term impacts of multiple types of media influence, as well as the alternation of individual imagination.

CONCLUSION

"Maybe we were tied up together with strings and supporting one another. When some strings and knots were figured out, other parts snapped. When one string was pulled too tightly, everything collapsed in an instant. I had to connect the dots, one string with another, closely observing the others, to get them to ***save one another*** *without realizing it."*

-The Most Beautiful Moment in Life: The Notes 1

The aim of this study was to highlight the power of parasocial interaction as a valid component, while considering holistic care, regarding individuals with ASD and various deficits, in multiples area, researched from available resources, that were collected, so far.

Disagreements within disciplines regarding the function of imagination in autism spectrum disorders can be resolved by identifying various imaginary competencies, such as intra- and interpersonal aspects. The participant's personal accounts give us a unique window into the minds of individuals with ASD, and they also, and perhaps most importantly, shed light on the fact that individuals with ASD actively participate in creating their own coping mechanisms for dealing with difficulties (Visuri, 2019).

As was presented through the previous chapters parasocial interaction can be described as a modifying element, changing based on a specific. Therefore, the determination of whether and how the parasocial phenomenon works in different types of sources, such as books, games, media contexts, or even own imagination is currently an unstable goal. And so, further research should look at the entire range of hidden factors (Liebers & Schramm, 2017).

For instance, we can come up with a complete palette of questions that might resolve parasocial interaction even more for future possible therapeutic purposes:

watching a celebrity/persona/idol on television/social media/game vs. reading about them in a magazine vs. creating it in a safe space of own imagination

To comprehend in a more complex dimension, what the parasocial phenomenon is, how it manifests itself in various contexts, and how it interacts with reception and impact constructs, parasocial research must look into and fill these gaps (Liebers & Schramm, 2017).

As we can see, the trend of parasocial interaction is still not quite solved in the dimension of neurotypical society, therefore, we are more than honoured that we could investigate this topic within the lines of ASD. Due to the depicted matter, these connections are deemed important to the receivers/creators of PSI and their everyday lives despite the absence of reciprocity in PSI (Kowert & Daniel, 2021).

Another important part of ASD, includes, that on occasion, individuals even alter their actions to conform to the personalities, demeanours, or fashion sense of their idols (Chen, 2014). From the perspective of individuals with ASD, it is a very important finding, because of its versatility of practical usage, linked with the adjustment of undesired deficits. Then, these deficits can be unconsciously suppressed, in order to reflect desired behavioural patterns, (which might significantly change the field of therapies, specifically constructed for these individuals, with an emphasis on their conscious and prudent actions).

Also, PSI in young children is a multidimensional construct made up of dimensions like social realism, attachment and character personification, and human-like needs, according to parent report measurements. Paralleling the maturational shifts in children's real friendships creates a new dimension for these kinds of character traits, emerging and evolving from a "simple" imagination game (Aguiar et al., 2018).

Of course, we need to take into account, that the influence of the presumed influence model and parasocial interactions must be sometimes coordinated and corrected by specialists, in order to avoid getting more maladaptive patterns, but in general, it is safe to claim that any representation of non-neurotypical group

can be a helpful component in a future evolving skills and abilities, within the group with specific deficits in various conditions, that require medical attention. One of these successful representations linked with positive reactions was *Monk*, a television show about a detective with *obsessive-compulsive disorder (OCD).* The perceived impact of Monk on attitudes toward OCD and those of others was associated with behavioural and psychological outcomes, such as willingness to seek and disclose mental health treatment and perceived benefits to self-esteem (Hoffner & Cohen, 2012). Because of how Monk or other relatable characters are created and portrayed, then these characters may appear lifelike to children (Kowert & Daniel, 2021). Through this lifelike experience, it is easier to create a bond, which would not only function as a distant persona in another world, but on the other hand, it can navigate the chaotic life of individuals, which may often feel alone and lost in it. That is possible, due to the special connection, created in a need for help seekers, because everyday life can be indeed overwhelming, therefore individual's coping mechanism can turn into escaping, reflecting tool in the formation of attachment.

All in all, we are more than encouraged to further investigate the phenomenon of parasocial interaction in the context of ASD, but also in general, linked with various types of disorders. While society still considers this more a tabu topic, we are convinced, that if it will be produced more studies as ours, it would help not only the mentioned community, but the society in general, as we know, because lines of influence of parasocial interaction can be vivid and florid in a way of getting proper satisfaction and easement from everyday hardships, deriving from something so simple, but it the same time, indeed complex, as the quote stated in the beginning of our conclusion suggested, by saving one another without even realizing it.

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APPENDIX

Appendix A – AQ: OTS

Appendix B – EQ: ER

Appendix C – RMET: MO

Appendix D – PSI: ES

Appendix A

(Baron-Cohen et al., 2006)

Autistický kvocient (AQ) dospelých

EXEMPLÁR LEN PRE VÝSKUMNÉ ÚČELY.

Podrobné informácie v:

S. Baron-Cohen, R. Hoekstra, R. Knickmeyer, S. Wheelwright, (2006)
The Autism Spectrum Quotient (AQ) – Adolescent Version
Journal of Autism and Developmental Disorders.

TRANSLATION: Daniela Ostatníková
Institute of Physiology, Medical Faculty, Comenius University, Bratislava

Meno:..... Pohlavie:.....

Dátum narodenia:..... Dnešný dátum:.....

Ako vyplniť dotazník

Dotazník pozostáva z výrokov. Prosím veľmi pozorne si prečítajte každý výrok a uveďte ako veľmi súhlasíte alebo nesúhlasíte s výrokom vyznačením príslušnej odpovede vedľa každého výroku.

NEVYNECHAJTE ANI JEDEN VÝROK

Príklady

E1. Rád/rada riskujem.	súhlasím	skôr súhlasím	skôr nesúhlasím	nesúhlasím
E2. Rád/rada hrám stolové hry.	súhlasím	skôr súhlasím	skôr nesúhlasím	nesúhlasím
E3. Považujem za jednoduché učiť sa hrať na hudobných nástrojoch	súhlasím	skôr súhlasím	skôr nesúhlasím	nesúhlasím
E4. Fascinujú ma iné kultúry.	súhlasím	skôr súhlasím	skôr nesúhlasím	nesúhlasím

	Súhlasím	Skôr Súhlasím	Skôr Nesúhlasím	Nesúhlasím
1. Uprednostňujem činnosti v kolektíve pred samostatnými činnosťami.				
2. Uprednostňujem robenie vecí znovu a znovu tým istým spôsobom.				
3. Ak sa snažím si niečo predstaviť, je pre mňa jednoduché vytvoriť si obraz vo svojej mysli.				

	Súhlasím	Skôr Súhlasím	Skôr Nesúhlasím	Nesúhlasím
4. Často ma tak zaujme jedna vec, že potom nevidím ostatné veci.				
5. Často zachytím tiché zvuky, keď ostatní nič nepočujú.				
6. Často si všímam poznávacie značky áut alebo veci s rovnakým spoločným typom informácie.				
7. Ostatní ľudia ma často upozorňujú, že sa správam nezdvorilo, zatiaľ čo ja si myslím, že sa správam zdvorilo.				
8. Keď si čítam príbeh, dokážem si jednoducho predstaviť, ako vyzerajú hlavné postavy.				
9. Fascinujú ma dátumy.				
10. Keď som v skupine, dokážem súbežne sledovať konverzáciu viacerých ľudí.				
11. Nemám problémy v spoločenských situáciách.				
12. Mám tendenciu všímať si detaily, ktoré si iní nevšímajú.				
13. Radšej by som šiel/šla do knižnice ako na párty.				
14. Vymýšľanie príbehov považujem za jednoduché.				
15. Cítim sa viac naviazaný/á na ľudí ako na veci.				
16. Mávam veľmi vyhranené záujmy a som nesvoj/a, keď sa im nemôžem venovať.				
17. Obľubujem spoločenské “táranie”.				
18. Keď rozprávam, pre ostatných nie je vždy jednoduché dostať sa k slovu.				

	Súhlasím	Skôr Súhlasím	Skôr Nesúhlasím	Nesúhlasím
19. Som fascinovaný/á číslami.				
20. Keď čítam príbeh, je pre mňa ťažké pochopiť zámery postáv.				
21. Nerád/nerada čítam fikcie.				
22. Ťažko si hľadám nových priateľov.				
23. Stále si všímam usporiadanie a štruktúru vecí.				
24. Radšej by som šiel/šla do divadla ako do múzea.				
25. Nerozruší ma, keď sa moje denné rutiny narušia.				
26. Často sa mi stáva, že neviem, ako mám pokračovať v rozhovore.				
27. Zdá sa mi jednoduché "čítať medzi riadkami", keď sa so mnou niekto rozpráva.				
28. Zvyčajne sa viac sústredím na obrázok ako celok, ako na jeho drobné detaily.				
29. Nepamätám si veľmi telefónne čísla.				
30. Zvyčajne si nevšimnem malé zmeny v situáciách a vo výzore ostatných.				
31. Viem rozpoznať, ak sa niekto, kto ma počúva, začína nudiť.				
32. Dokážem robiť viac vecí naraz.				
33. Keď telefonujem, nie som si vždy istý/á, kedy som na rade s rozprávaním.				

	Súhlasím	Skôr Súhlasím	Skôr Nesúhlasím	Nesúhlasím
34. Rád/rada robím veci spontánne.				
35. Často pochopím pointu vtipu ako posledný/á.				
36. Je pre mňa jednoduché rozpoznať, čo si niekto myslí alebo cíti, len podľa výrazu jeho tváre.				
37. Ak som vyrušený/á, ľahko a rýchlo sa vrátim späť k tomu, čo som robil/a.				
38. Som dobrý/á v spoločenskom "táraní".				
39. Ľudia mi často vravia, že stále robím tú istú vec dokola.				
40. Keď som bol/a mladší/ia, rád/rada som sa hrával/a s ostatnými deťmi "na niečo" "na niekoho".				
41. Rád/rada zbieram informácie o kategóriách vecí (typy áut, typy vtákov, typy vlakov, typy rastlín, atď.)				
42. Ťažko si dokážem predstaviť, aké by to bolo byť niekým iným.				
43. Rád/rada starostlivo pripravujem aktivity, ktorých sa sám/sama zúčastňujem.				
44. Obľubujem spoločenské udalosti.				
45. Ťažko chápem zámery druhých ľudí.				
46. Nové situácie ma znepokojujú.				
47. Rád/rada stretávam nových ľudí.				
48. Som dobrým diplomatom/diplomatkou.				

	Súhlasím	Skôr Súhlasím	Skôr Nesúhlasím	Nesúhlasím
49. Neviem si dobre zapamätať dátumy narodenia druhých ľudí.				
50. Mám rada hru, v ktorej môžem niekoho alebo niečo imitovať (hra na niečo, niekoho)				

Appendix B

(Baron-Cohen & Wheelwright, 2004)

EQ

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Journal of Autism and Developmental Disorders 34:163-175

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	úplne súhlasím	skôr súhlasím	skôr nesúhlasím	úplne nesúhlasím
1. Dokážem ľahko rozoznať, či sa niekto iný chce zapojiť do rozhovoru.	☐	☐	☐	☐
2. Uprednostňujem zvieratá pred ľuďmi.	☐	☐	☐	☐
3. Snažím sa držať bežných trendov a módy.	☐	☐	☐	☐
4. Nedokážem vysvetliť iným niečo, ak tomu hneď na prvýkrát neporozumejú, aj keď mne to je jasné.	☐	☐	☐	☐
5. V noci väčšinou aj snívam.	☐	☐	☐	☐
6. Rád sa starám o druhých.	☐	☐	☐	☐
7. Radšej riešim problémy sám/a ako s inými.	☐	☐	☐	☐
8. Mám problémy s tým, ako sa správať v spoločnosti.	☐	☐	☐	☐
9. Všetko sa mi darí najlepšie hneď ráno.	☐	☐	☐	☐
10. Ľudia často hovoria, že pri diskusii zachádzam do veľkých podrobností.	☐	☐	☐	☐
11. Neznepokojujem sa, keď meškám na schôdzku s priateľom.	☐	☐	☐	☐
12. Priateľstvá a vzťahy sú také komplikované, že sa nimi nesnažím znepokojovať.	☐	☐	☐	☐
13. Nikdy nechcem porušiť zákon ani v najmenšom.	☐	☐	☐	☐
14. Ťažko sa mi súdi, či je niečo drzé alebo zdvorilé.	☐	☐	☐	☐
15. Pri rozhovore sa radšej zameriavam na svoje vlastné myšlienky ako na to, čo si myslí môj poslucháč.	☐	☐	☐	☐
16. Uprednostňujem kanadské žartíky pred hovorenými vtipmi.	☐	☐	☐	☐
17. Radšej žijem život pre dnešok ako pre budúcnosť.	☐	☐	☐	☐
18. Keď som bol/a dieťa, rád/a som krájal/a dážďovky, aby som videl/a, čo sa s nimi stane.	☐	☐	☐	☐

19. Rýchlo odhalím, ak niekto iné hovorí a iné si myslí.	☐	☐	☐	☐
20. Mám vyhranené názory na morálku.	☐	☐	☐	☐
21. Ťažko chápem, prečo niektoré veci ľudí rozľútostia.	☐	☐	☐	☐
22. Ľahko sa viem vžiť do kože druhého.	☐	☐	☐	☐
23. Myslím, že dobré spôsoby sú najdôležitejšou vecou, ktorú môžu rodičia deti naučiť.	☐	☐	☐	☐
24. Najradšej všetko vybavím hneď.	☐	☐	☐	☐
25. Viem dobre predvídať pocity iných.	☐	☐	☐	☐
26. Rýchlo zistím, keď sa niekto v spoločnosti cíti trápne alebo nepríjemne.	☐	☐	☐	☐
27. Ak poviem niečo, čo sa druhého dotkne, je to jeho problém, nie môj.	☐	☐	☐	☐

Appendix C

(Baron-Cohen et al., 2001)

RMET

REFERENCES: R. Adolphs, S. Baron-Cohen and D. Tranel, (2002)
Impaired Recognition of Social Emotions following Amygdala Damage
Journal of Cognitive Neuroscience 14:8:1-11

S. Baron-Cohen, S. Wheelwright and J. Hill, (2001)
The 'Reading the mind in the eyes' test revised version: A study with normal adults, and adults with Asperger Syndrome or High-Functioning autism
Journal of Child Psychology and Psychiatry 42:241-252

TRANSLATION: Veronika Mattová, Comenius University, Bratislava

skúška

žiarlivý úzkostlivý

arogantný nenávistný

1

hravý upokojujúci

iritujúci znudený

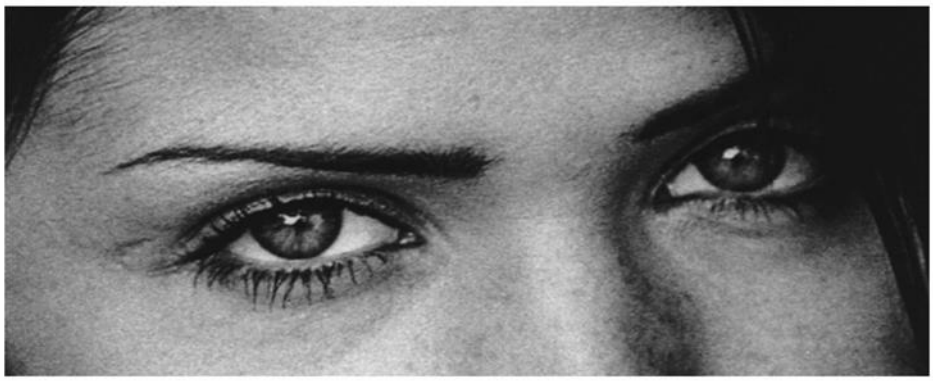
2

vydesený znepokojený

arogantný nahnevaný

3

vtipkujúci rozrušený



túžobný presvedčivý

4

vtipkujúci

nástojčivý

pobavený

uvoľnený

5

iritovaný

sarkastický

ustarostený

priateľský

6

zhrozený

ponorený do predstáv

nedočkavý

prestrašený

7

ospravedlňujúci priateľský

napätý skleslý

8

skľúčený

upokojujúci

hanblivý

vzrušený

9

nahnevaný nevraživý

preľaknutý zaneprázdnený

10

opatrný naliehavý

znudený zhrozený

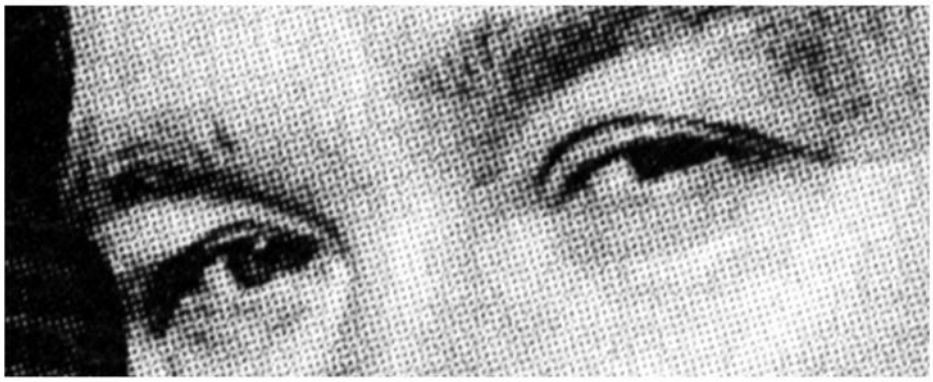
11

zdesený pobavený

ľútostivý koketný

12

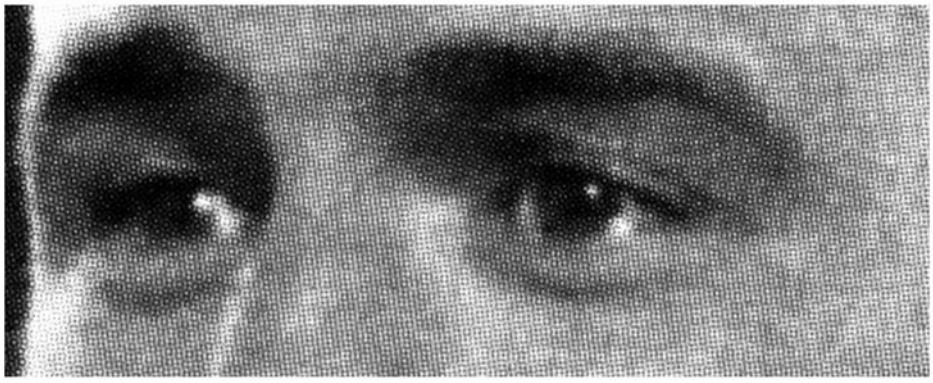
ľahostajný zahanbený



skeptický skleslý

13

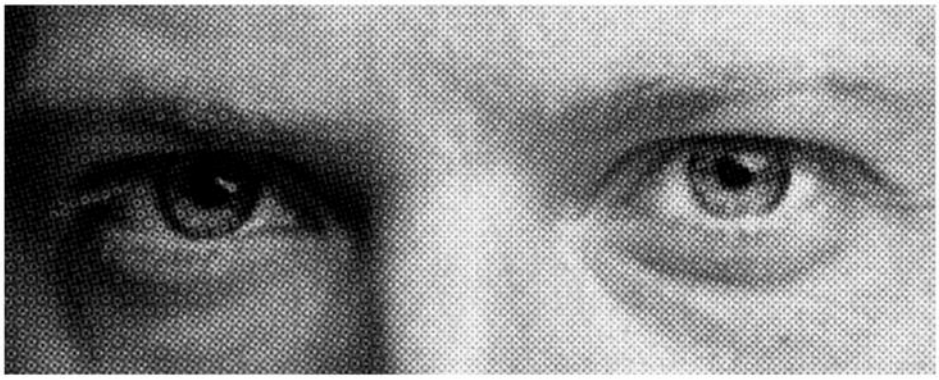
rozhodný predvídavý



výhražný hanblivý

14

iritovaný sklamaný



depresívny vyčítavý

15

rozjímavý

rozrušený

povzbudzujúci

pobavený

16

iritovaný

hĺbavý

povzbudzujúci

súcitný

17

pochybovačný láskyplný

hravý rozrušený

18

rozhodný pobavený

rozrušený znudený

19

arogantný

vďačný

sarkastický

váhavý

20

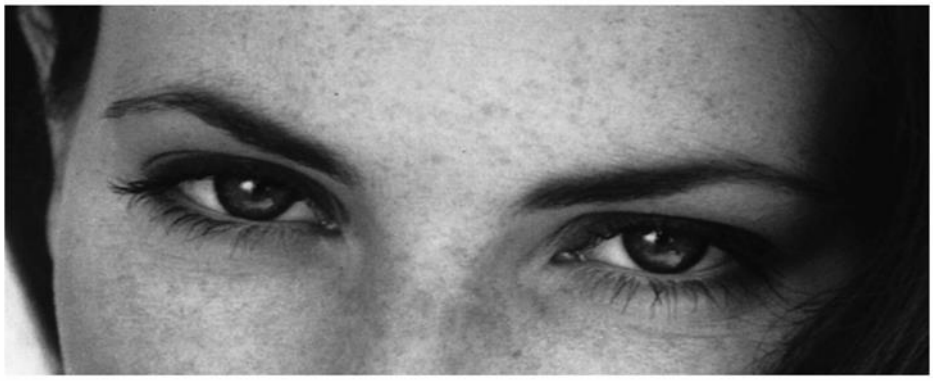
dominantný priateľský

previnilý preľaknutý

21

hanblivý

ponorený do predstáv



zmätený

úzkostlivý

22

zaneprázdnený vďačný

nástojčivý prosebný

23

naplnený

ospravedlňujúci

vzdorovitý

zvedavý

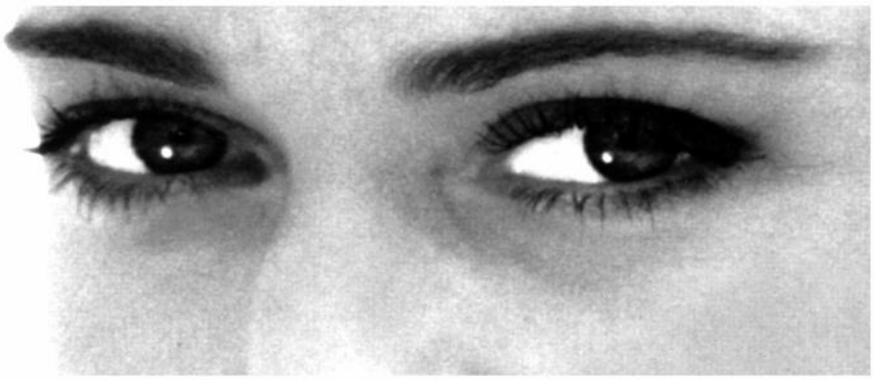
24

zádumčivý iritovaný

vzrušený nevraživý

25

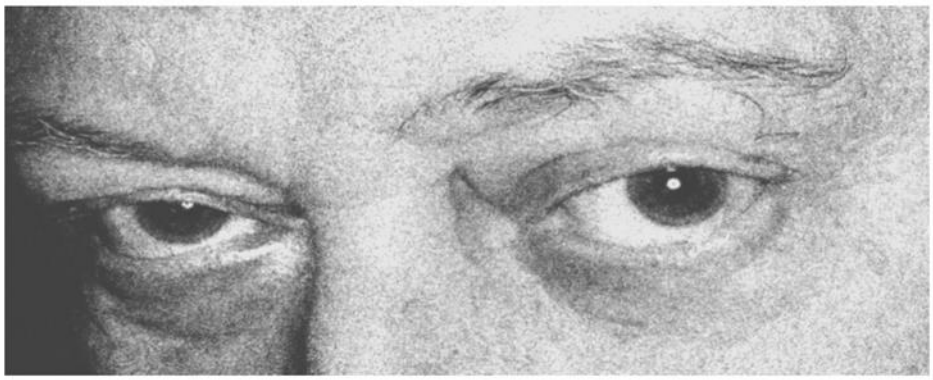
úzkostlivý nedôverčivý



skľúčený zaujímajúci sa

26

prestrašený hanblivý



nevraživý anxiózny

27

vtipkujúci obozretný

arogantný utvrdzujúci

28

zaujímajúci sa

vtipkujúci

láskyplný

naplnený

29

netrpezlivý rozrušený

iritovaný reflektívny

30

vďačný koketný

nevraživý sklamaný

31

ostýchavý sebavedomý

vtipkujúci skleslý

32

vážny ostýchavý

pomýlený prestrašený

33

zahanbený previnilý

ponorený do predstáv znepokojený

34

rozrušený zarazený

nedôverčivý zdesený

35

rozpačitý nervózny

nástojčivý rozjímavý

36

ostýchavý nervózny

podozrievavý skleslý

Appendix D

(Claessens & Van Den Bulck, 2015)

Parasocial Interaction Questionnaire

REFERENCE:
Claessens, Nathalie and Van den Bulck, Hilde. "Parasocial relationships with audiences' favorite celebrities: The role of audience and celebrity characteristics in a representative Flemish sample" Communications, vol. 40, no. 1, 2015, pp. 43-65. https://doi.org/10.1515/commun-2014-0027

TRANSLATION: Veronika Mattová, Comenius University, Bratislava

EXEMPLÁR LEN PRE VÝSKUMNÉ ÚČELY

ID Participanta *

ID

Dátum narodenia *

MM-DD-YYYY

Date

Dnešný dátum *

MM-DD-YYYY

Date

Pohlavie *

Please Select

Oblasť pôsobenia MOP: *MOP-Moja obľúbená persona z anglického MFP-my favourite persona (zahŕňa nie len reálne osoby, ale i postavy z kníh, hier alebo iných fantazijných postáv) *

Please Select

Meno MOP (v prípade, ak sa jedná o konkrétnu postavu/y) *

Moja MOP je časovo: *

- aktuálna
- z minulosti
- situačná
- iné

TRANSLATION: Veronika Mattová, Comenius University, Bratislava *MOP-Moja obľúbená persona z anglického MFP-my favourite persona (zahŕňa nie len reálne osoby, ale i postavy z kníh, hier alebo iných fantazijných postáv) ©Universiteit Antwerpen *

	Súhlasím	Skôr Súhlasím	Skôr Nesúhlasím	Nesúhlasím
1. Mám pocit, že MOP dobre poznám.				
2. MOP môže byť môj kamarát.				
3. Myslím si, že MOP je atraktívna.				
4. Dokážem sa vcítiť do emócií MOP.				
5. Učím sa z činov MOP.				
6. Často mám rovnaký názor ako MOP.				
7. Keď sa MOP stane niečo zlé, cítim sa takisto zle.				
8. Keď sa v médiách objaví niečo zlé o MOP, cítim sa zranený/á				
9. Keď sa moji priatelia smejú na MOP, cítim sa zranený/á.				

10. Rád hovorím o MOP s inými ľuďmi.	◯	◯	◯	◯
11. Hovorím o MOP ako o svojich priateľoch.	◯	◯	◯	◯
12. Cítim sa prepojený/á s MOP rovnako ako so svojimi priateľmi.	◯	◯	◯	◯
13. MOP je pre mňa ako člen rodiny.	◯	◯	◯	◯
14. Som presvedčený/á, že je dôležité vedieť všetko o MOP.	◯	◯	◯	◯
15. Niekedy aktívne vyhľadávam informácie o MOP.	◯	◯	◯	◯
16. Rád by som sa stretol s MOP.	◯	◯	◯	◯
17. Pokúsil som sa dostať do kontaktu s MOP (denné snívanie).	◯	◯	◯	◯
18. Nechcem sa stretnúť s MOP/ predstavovať si stretnutie s MOP, ak budem mať príležitosť, pretože verím, že ak tak urobím, kúzlo zmizne.	◯	◯	◯	◯
19. Vďaka tomu, že môžem sledovať MOP na Facebooku alebo Twitteri/ vytvárať fan pages venované MOP, sa cítim blízko neho/nej.	◯	◯	◯	◯