



PÉCSI TUDOMÁNYEGYETEM
UNIVERSITY OF PÉCS

**Psychological Immersion During Digital Media Usage:
Appearance, Reality and Virtuality**

Doctoral (PhD) Thesis

István Tamás

Theoretical Medical Science School

Supervisor: Prof. Dr. János Kállai

Head of the Doctoral School: Prof. Dr. Dóra Reglődi

Programme Leader: Dr. habil. Árpád Csathó

2024.

Introduction

Examining the history of human relations, it seems that individuals have an ancient psychological desire to create a shared reality with those, with whom they perceive themselves as belonging to a common group. Therefore, one of the central problems of human cognition theories is the explanation of how we can know and create reality. How can we acquire reliable knowledge or legitimate justified belief about an external world, about things outside of us. In psychological terms, reality can be physical, psychological or virtual. It is common in everyday psychology to think that the physical world has both an extension and a location in space. In contrast, psychological reality has no spatial dimensions and its location is present only "in the mind"; for this reason, it is a thousand-year-old debate, can we talk about psychological reality at all? In everyday life and in classical physics, we take it for granted that the physical world exists regardless of whether we observe it or not. In contrast, psychological realities are only real to a particular observer; feelings, thoughts, dreams and other psychological experiences, according to today's scientific psychology, do not exist by themselves, independently of the person. These intuitions are strengthened by the fact that physical realities have tangible, essential properties such as mass, solidity, and weight. Psychological qualities are intangible and meaningless in comparison. Virtual realities, however, seem to form a third, distinct category. Most people are able to function in all three psychological realities, with individual effectiveness.

One of the difficulties in distinguishing, understanding and experiencing different realities is that, in a psychological sense, all three realities appear to the person in a mediated form - through the mediation of one or more mediums. I'm using the term medium in the sense of something as an intermediary, "that is between at least two things". In psychological terms, a medium can be internal (e.g. the human body, senses, mind) or external (e.g. a landmark, a media device). It can be physical (e.g. air, water), psychological (e.g. feeling, dream), or virtual (e.g. reference group, cultural influence). The "medium" is a tool that enables connection, which at times amplifies, dampens, captures, emphasizes; thereby affecting connectivity. An external medium can be a scientific text, a book, or a work of art. In these cases, the medium is an intermediate element of cognition, a means of distribution and expression. Almost a hundred years ago, Walter Benjamin (1936/2006) believed that with mass photographic and auditory reproduction, the paradoxical game of authenticity and reality began. On the one hand, the technical reproduction may even seem more real compared to the original work; for example, a photograph can highlight aspects of the depicted object that are only accessible to the camera of the photographer who arbitrarily chooses his angle, but not to the human eye. Or, with the help of certain procedures - such as magnification, light filtering or slow motion - the photographer can record images that remain hidden from the eye's optics. Another important effect of the new media formulated by Benjamin in the relationship between the depicted reality and the medium is the change and disappearance of the aura. How? On the one hand, with the duplicated transmission, the uniqueness of the depicted reality, which is the essential element of the aura, ceases.

On the other hand, pictorial and filmic representations that can be reproduced anytime, anywhere, in any quantity tear the depicted reality out of the here and now, tear it out of ritual, tradition, and cult. The digital environment generated by digital media makes the experiences of reality and the experiences related to them paradoxical. The psychological effects previously described by Benjamin for photography and film apply here as well. On the one hand, the environment highlighted and edited by digital media may seem more real than the object of representation. Virtual reality - as it encourages immersion, can be modified and is interactive - makes our experiences similar to or even more real than everyday reality. On the other hand, the aura and uniqueness of the depicted reality disappears in digital media as well. A significant number of actors in digital social networks are engaged in a desperate struggle to show their uniqueness. Being present in this new kind of reality - compared to the previous mass media - requires different skills, attitudes, behaviours and education. What used to be the world of fantasy can be realized in virtual reality. At the same time, with the help of the technical tools of the digital environment, the products of pathological mental functioning can also be dressed up in real clothes. Most of the psychological research on immersion primarily examines the effect of the medium on the senses. However, examining the emotional, thought, and fantasy side of immersion is becoming more and more important and necessary. Immersion is primarily a user experience, it is not tied and only partially connected to specific technology, rather the function of fantasy, attitude, style, and personal predispositions is decisive. Bricken (2005) argues that according to the function of psychology, it is a simulation of reality, in this sense it constructs a virtual reality. It simulates how the mind perceives and interprets physical reality. For this reason, the search for immersion and presence

must go beyond the search for realism, fidelity or culpability. Immersing yourself in the world of the medium, beyond the ability to "be there", considers it important to examine the phenomena of "feeling there" and "thinking there".

Among the personal factors that play a prominent role in the use of digital media, my investigations presented in the framework of the dissertation focus primarily on the analysis of self-functions. I am looking for answers to what psychological prerequisites and skills are necessary for a constructive presence in the digital world? Which behaviours, personality traits, and the functions involved in the construction of the self, which establish personal identity, influence the attitude towards the digital environment (mainly Facebook and Internet use).

Objectives

The mental construction of reality goes through many stages before the final, verified or real version is born. Coming into the world is preceded by a number of intervening forms, to which the person often returns in the course of processing in search of new sources. The construction of the unified structure of the reality construction depends on the conditions of the personal and social space and the operational characteristics of the individual. Consequently, the dynamic variations of content and form can be approached through the examination of several psychological mechanisms.

1. The relationship between psychological immersion and self-functions.

The concept of "immersion", has many variations and is used in many different senses in psychological, philosophical, anthropological, sociological, and aesthetic literature. Consequently, when we study the literature, we often find

overlapping concepts, and sometimes even contradictions. Conceptual diversity often masks the dynamics that arise from the natural uncertainties of the mental construction of reality. Perception and the person's self-determination can only maintain a certain redundancy and openness, even in uncertain situations, to preserve the person's coherence and ability to act.

2. Interpretation of the concept of "Self", its role in psychological immersion and the construction of reality.

In psychological research, the concept of the self is defined as a set of multifaceted, dynamic and more or less stable functions over time: self, oneself, knowledge about oneself, self-awareness, self-confidence, self-evaluation and many other concepts visible and at the same time invisible, constant but changing within certain frameworks knowledge system. Gordon Allport argued in the 1950s that the apparent obviousness and utility of the term self-tempts psychologists to obscure differences between the content and role of various functions. In the introductory part of this thesis, I will try to emphasize the differences between the functions. Furthermore, in line with the main theme of my research area, I will show how the degree of immersion in events, readings, and media content is connected to a more significant group of self-functions that respond to new challenges.

3. Theoretical analysis of some psychological effects of digital media, selection of research topics.

Digital media is a new medium that has different characteristics from previous media. Traditionally, the main constructional elements of reality - time, space, body - enable the creation of new types of connection in the digital space in terms of affective, cognitive and behavioural aspects. It can

create an immersion experience with the same intensity as physical presence. The time that determines behaviour planning and implementation can be accelerated or slowed down as desired in the digital space. The location of the activity can be changed in a matter of seconds, the behaviour that can be performed can override the limits of the person's physical and mental capabilities, can exceed the real limits. In addition, the identity of the person acting, for the person active in the media space, can become doubtful in several cases. The immersed person is able to change his presence, character, and identity without informing his peers. The display of the self, the possession of the self, its formability, and its functionality gain special importance in the digital space. The introductory part of the dissertation focuses on the presentation of research results and theories directly or indirectly related to these phenomena.

4. Research topics

Based on the reviewed international and domestic literature, and some of our previous research in this area, it seems that, contrary to expectations, in the research on immersion in the digital environment, more specifically in the world of Facebook and the Internet, self-functions receive less attention in proportion to their importance. Hungarian research groups present the causes and consequences of Facebook and problematic Internet use with outstanding international effectiveness (Demetrovics et al., 2022; Király et al., 2015; Koronczai et al., 2019). Our present investigations aim to bring to the fore the relationship between self-functions and events in the digital space in theoretical and practical areas. Taking into

account the results of studies conducted in this field, in addition to the undoubtedly beneficial forms of use of digital social media, there are also abusive, addictive forms of use. Some of these are directly accompanying phenomena of mental disorders, while others only lead to anxiety and adjustment disorders that make it difficult to lead a life, to acquire and maintain social relationships that are beneficial for all parties. These findings belonging to the interpretation circle of psychopathology point out that in the interpretation of the examined apparition we cannot forget the assessment of more general clinical pictures and the expansion of the interpretation frameworks concerning self-functions. For the interpretation of the data, we also added measuring instruments with psychopathology questionnaires, which provide an opportunity to explore the level of sub-clinical, and sometimes clinical-level disorders. In addition to anxiety states, the disturbance of self-functions is particularly pronounced in the case of schizophrenia spectrum disorders (Sass and Borda, 2015; Kállai, et al. 2018). This psychopathological spectrum has a very wide intensity ranging from normal creativity to unusual behaviour, magical thinking, and hallucinations. We used a questionnaire for assessing the degree of schizotypy belonging to the milder side of the spectrum and the areas of negative affectivity, detachment, antagonism, psychoticism, and disinhibition, which are of diagnostic importance in terms of personality disorders.

5. The research instruments' selection logic

In our opinion, the values of the Personality Inventory for DSM-5 Brief Form PID-5SF (Hungarian version: Birkás et al., 2018) questionnaires indicating schizotypy and a more strongly appearing personality disorder point to a vulnerability in the self-structure of some people (negative affectivity, separation

aspirations, antagonism, psychoticism, uninhibitedness), which thereby contribute to the identification of the interpretation problems of digitally mediated reality, virtuality and appearance. Also taking into account more general theoretical frameworks, the self-knowledge of a person who frequently uses digital media, the coherence of the self-experience, the trust base of automatic reactions related to the self, i.e. the clarity of the concepts regarding one's own self, the immersion in a digital environment with an uncertain outcome despite the everyday presence also provides the necessary stable background for the person to preserve his identity and healthy mentality. One of the main questions of our investigations conducted together with my colleagues is the cross-sectional examination of self-coherence, immersion, and participation in the digital environment. With the help of correlations and regression analyses, we focus on the exploration of concomitant and predictive factors. Since we want to explain the results of our studies with a general argument, we built the analyses that are the subject of the study on a database provided by healthy people from a multicentric source and continuously expanded.

The third motivational factor of my study is the fact that valid and reliable domestic questionnaires and measuring instruments are available only to a limited extent to investigate the mentioned theoretically open possibilities. We have available reliable Hungarian versions of the Problematic Internet Usage Questionnaire (PIHK, Koronczai, et al. 2011), Bergen Facebook Addiction Scale (BFAS, Andreassen, et al. 2012), Mental Health Continuum Short Form (MHCSF, Reinhardt, et al. 2020). Regarding the measurement of schizotypy and PID-5 as well as the clarity of the self (Self-Concept Clarity, (SCCS, Hargitai et al., 2020), the Hungarian adaptation was already born before the preparation of my

present studies. In addition, however, we do not have domestic measures to assess the degree of immersion. We have completed the necessary adaptation procedure in the framework of the present tests. The first test to be presented is the development of the Immersion Tendency Questionnaire and the role of certain self-functions in problematic internet use, adaptive or maladaptive use.

I. The First empirical study: the development of a reliable domestic version of the measurement of immersion.
(based on the study: *A médiaesközök világába való belemerülés: adaptív és nem adaptív következmények*, Rózsa, S., Hargitai, R., Láng, A., Osváth, A., Hupuczi, E., Tamás, I., Kállai, In: *Mentálhigiéné és Pszichoszomatika* 21, 2020, 4. 349-373.)

Measuring a person's ability to immerse themselves in a mediated environment depends on technical device conditions, personal inclinations, abilities and behavioural habits. In the mediated reality, immersion and presence are not continuous and are often interrupted, but the degree shows a picture characteristic of the individual. Among the available instruments, the 18-item Immersion Tendency Questionnaire (ITQ, Witmer and Singer, 1998; Robillard et al., 2002; Weibel et al., 2010;) The ITQ measures immersion in watching movies, reading books, and using digital media based on three factors: (1) immersion (2) ignoring the disturbing effects of the environment (focusing); (3) increased interest in computer or video games (gaming). In our first study, we examined the validity indicators of the scales of the ITQ questionnaire and their domestic applicability using factor analysis.

I.1. Method and research instruments

During the preparation of the Hungarian adaptation, factor analysis was used to examine the validity indicators of the

scales of the ITQ questionnaire and personality traits with adaptive and non-adaptive potential related to immersion. To achieve the above goal, we chose questionnaires with reliable and good validity indicators: to examine adaptive traits, the Self-Concept Clarity Scale (Campbell et al., 1996; Hargitai et al., 2020; Self-Concept Clarity Scale) and the Short Version of the Health Continuum (Mental Health Continuum Short Form, MHC-SF; Keyes, 2013; Reinhardt, 2014) we used a questionnaire.

Regarding maladaptation, the Schizotypal Personality Questionnaire Brief Revisited (SPQ-BR; Cohen et al., 2010; Kállai et al., 2018) and the DSM-5-based Personality Questionnaire (PID-5, Krueger et al., 2012; Birkás et al., 2018), as well as Tellegen Absorption Questionnaire (Tellegen Absorption Questionnaire (TAS, Tellegen and Atkinson, 1974; Rózsa et al., 2019) was chosen to determine the degree of psychopathological vulnerability.

I.2. The Participants

781 university students participated in the study (192 men, average age = 28.6 ; SD = 11.4) and 589 women (mean age = 28.4, SD = 11.03). They participated in the study without compensation. Each person received detailed information about the study process and a written statement of their intention to participate 6732 PTE/2017), taking into account the principles of the Declaration of Helsinki. When filling out the questionnaires, we only asked the participants to indicate "gender" and "age".

I.3. Data analysis

To identify the factor structure, we used the unweighted least squares method with genome rotation and the hierarchical

Schmid-Leiman solution (Schmid and Leiman, 1957). Confirmatory factor analysis (CFA) was performed to examine the fit of the original and proposed models. Because the variables were nonparametric, CFA was performed using a robust estimator (maximum likelihood estimation with robust standard errors and adjusted for mean and variance, MLMV), which appropriately corrects the standard errors of the parameters.

I.4. Results: Development of a reliable Hungarian measurement tool for psychological immersion.

Short version of the ITQ-10 Table 1. Descriptive statistics and internal consistency of the ITQ-18 scale and sub-scales.

Scales	Number	α	Female		Male		F	p	Partial η^2
			Mean	SD	Mean	SD			
Sub-scales	of Items								
Involvement	7	0,78	31,85	5,93	33,43	6,77	4,58	0,033	0,006
Focus	7	0,59	27,27	8,06	25,87	8,95	11,28	0,001	0,014
Games	4	0,70	3,27	2,11	6,26	3,87	192,80	0,000	0,199
ITQ Total	18	0,80	71,01	13,76	75,26	17,63	15,64	0,000	0,020

Table 1. Internal consistency reliabilities (α), means, standard deviations (SD), and gender differences on the ITQ-18 scale and subscales.

The descriptive statistics of ITQ-18, Cronbach α values and gender differences are shown in Table 1.

However, based on the literature data presented earlier, the question arises as to whether scales that are uncertain in other cultures may affect the accurate assessment of the degree of immersion. Cronbach's alpha values measured on the Hungarian sample show that it is worth considering this possibility.

Consequently, by reducing the number of factors and items, we can obtain a more reliable measurement tool. Based on this consideration, an analysis of two factors confirmed our expectations, during which we developed the 10-item Hungarian version of the ITQ. (The Hungarian version of the ITQ-10 can be found in the appendix of the dissertation. The results of the tree analysis are shown in Table 2. The ITQ-10 contains two reliable factors. According to their traditional names: immersion ($\alpha = 0.81$) and focusing ($\alpha = 0.67$).

ITQ-18 Items	Sub-scales	F1-Focus	F2-Involvement	H ²
1. Do you easily become deeply involved in movies or TV dramas?	Focus	0.18	0.51	0.35
2. Do you ever become so involved in a television program or book that people have problems getting your attention?	Involvement	0.08	0.61	0.41
3. How mentally alert do you feel at the present time?	Focus	0.63	-0.27	0.36
4. Do you ever become so involved in a movie that you are not aware of things happening around you?	Involvement	0.03	0.74	0.56
5. How frequently do you find yourself closely identifying with the characters in a story line?	Involvement	0.09	0.58	0.37
6. Do you ever become so involved in a video game that it is as if you are inside the game rather than moving a joystick and watching the screen?	Gaming	-0.09	0.56	0.29
7. How physically fit do you feel today?	Focus	0.60	-0.19	0.35
8. How good are you at blocking out external distractions when you are involved in something?	Focus	0.65	-0.02	0.42
9. When watching sports, do you ever become so involved in the game that you react as if you were one of the players?	Involvement	0.16	0.32	0.16
10. Do you ever become so involved in a daydream that you are not aware of things happening around you?	Involvement	-0.10	0.72	0.48

11. Do you ever have dreams that are so real that you feel disoriented when you awake?	Involvement	-0.18	0.59	0.32
12. When playing sports, do you become so involved in the game that you lose track of time?	Focus	0.24	0.36	0.24
13. How well do you concentrate on enjoyable activities?	Focus	0.59	0.08	0.38
14. How often do you play arcade or video games? (OFTEN should be taken to mean every day or every two days, on average.)	Gaming	-0.09	0.35	0.11
15. Have you ever gotten excited during a chase or fight scene on TV or in the movies?	Focus	0.07	0.55	0.34
16. Have you ever gotten scared by something happening on a TV show or in a movie?	Involvement	-0.06	0.58	0.31
17. Have you ever remained apprehensive or fearful long after watching a scary movie?	Involvement	-0.17	0.45	0.19
18. Do you ever become so involved in doing something that you lose all track of time?	Focus	0.14	0.57	0.40

I.5 ITQ-10 external validity

Table 3. shows that the ITQ-18 and ITQ-10 scales have a high correlation. In the case of external validity, the ITQ-10 Focus

scale was positively correlated with personality predispositions indicating adaptability (e.g. SCCS, MHC-SF) and negatively with a group of adjustment problems (e.g. SPQ-BR, PID-5). The immersion subscale of the ITQ seems to be a strong predictive factor in terms of possible clinical problems (e.g. SPQ-BR, Negative affectivity), however, the ability to focus is associated with lower negative affectivity and a lower desire to detach from relationships.

	Focus (ITQ_10)	Involvement (ITQ_10)	ITQ_10 total
Original ITQ-18 scales			
Focus	0.71**		
Involvement		0.89**	
ITQ total			0.89**
External validity Scales			
TAS	0.051	0.45**	0.41**
SCCS	0.50**	-0.38**	-0.19**
MHC-SF	0.48**	-0.06	0.16**
SPQ-BR	-0.27**	0.32**	0.15**
PID-5			
Negative affectivity (PID-5)	-0.31**	0.23**	0.06
Detachment (PID-5)	-0.33**	0.00	-0.14**

Table 3. Correlation of ITQ-18 and ITQ-10 scales.

I.6. Interpretation of ITQ-10 and personality traits data

In the first part of this empirical study, I presented the ITQ-10, which is a short form of the ITQ-18. We have identified two scales that behave differently when assessing social media use. The Focused attention scale is associated with adaptive, while the immersion tendency scale is associated with maladaptive personality traits. The second part of the presented data showed detailed patterns of personality traits, through which the content of ITQ factors can be discovered. The most important basis of social adaptation is life satisfaction, self-identity, a positive and supportive social environment, a clear identity and the presence of trusting relationships (Keyes et al., 2013). Our results presented with the ITQ-10 showed that the use of digitally mediated communication channels contributes to social health and the creation of a supportive environment in cases where people are able to distinguish between relevant and irrelevant events for themselves and have less negative affect. with secession aspirations. These adaptive endeavours appear together with the ability of conscious and controlled Focused attention. Our data support the data of Koronczai et al. (2019) regarding the positive effects of conscious presence on emotional, cognitive and behavioural control (conscientiousness). On the other hand, although the tendency to immerse oneself plays a role in emotional and cognitive immersion, in the deep emotional experience of scenes, which can sometimes be a source of inspiration for creative activity at the same time, in the absence of adequate conscious focus, a maladaptive outcome naturally arises. Increased immersion tendency is associated with more marked schizotypal characteristics and negative affect.

In summary: based on our results, the ITQ-10 questionnaire is a suitable tool for assessing the relationship between the personal characteristics of immersion and psychological functions dependent on the environment. The results of our study can be effectively used in the analysis of the beneficial and adverse effects of digitally mediated social media use.

II. The method of the second empirical study, its participants, and the research tools used. (*Based on the study of Factors influencing schizotypal personality trait-dependent immersion and digital media usage: Adaptation and maladaptation. I. Tamás, S. Rózsa, R. Hargitai, I. Hartung, A. Osváth, J. Kállai, In: Acta Psychologica, 2022*)

The main question of the study is whether psychological immersion during the use of social media, what role do the various functions that reflect the state of the self, have in the adaptive or maladaptive manifestations of activity in the digital environment. In the introductory part of the dissertation, I review the relevant group of historical and current theories related to the functions of the self, primarily from the point of view of the phenomenon of immersion. The goal is to highlight the interpretation possibilities of reality, virtuality and appearance related to the self and to present its problematic areas. Furthermore, the review also provides an opportunity to explore the methods needed to answer the open questions. During the selection of the methods, the procedures for assessing the problematic use of the Internet and Facebook came to the fore, through which the adaptability and possible vulnerability of the self-functions can be revealed. Creating an alternate digital reality and media-mediated sense of immersion depends on a combination of multi-dimensional factors. The

level of concentrated interest in the digital world and immersion in the use of such tools varies from individual to individual. Activity in a digitally mediated environment can have both beneficial and adverse consequences depending on the user's strategy (Wegmann et al., 2023). Domestic studies also show that the choice of strategy depends on a number of conditions and depends on individual attitude, the ability to immerse oneself, concentration of attention, commitment, worry, openness, self-boundary uncertainty (Koronczai et al., 2019).

A better understanding of the cognitive and affective aspects of immersion in digital environments may help to recognize the relationship between problematic media use and disturbances of self-coherence, loss of control over actions, and behavioural addictions related to media use. Based on our previous studies and the review of the literature on the topic of immersion, we are looking for answers to the questions that arise through the following hypotheses.

II.1. Hypotheses

The focus of our digital media immersion research was, the exploration of factors that threaten self-coherence.

We hypothesize: (1) The dysfunctional functioning of the self and the increased capacity for immersion show a correlation in the case of Facebook addiction and other problematic technology use habits.

(2) We also assume that the limited display ability and schizotypal state of the self, provide a favourable background for the development of maladaptive Facebook and problematic Internet use.

(3) Immersion and focused conscious participation during social media use lead to different usage styles and outcomes.

II. 2. The participants

The study was conducted with 717 people, of whom 186 were men (mean age: 28.49; SD: 11.2) and 531 were women (mean age: 28.4; SD: 10.9). The participants were college students and graduates of the Pécs Regional University between 2018 and 2019. The data collection was done with open, voluntary access, and we did not pay the participants for their participation. The conduct of the research and the agreements were recorded in writing in accordance with the Declaration of Helsinki. The ethical approval is as follows: 6732 PTE-2017 no. The participants received the questionnaires, which they completed anonymously. The only demographic data provided were gender, age, and highest level of education.

II.3. The research instruments and questionnaires we used:

1. Five items of digital device usage habits: hours spent per day expressed as a subjective estimate, while watching TV, reading books, playing computer games, using Facebook, and using other social media.
2. Immersive Tendencies Questionnaire (ITQ; Witmer & Singer, 1998).
3. Tellegen Absorption Scale (TAS; Tellegen and Atkinson, 1974, domestic adaptation: Simor Köteles and Bódizs, 2011).
4. Self-Concept Clarity Scale (SCCS; Campbell et al., 1996; Hungarian version: Hargitai et al., 2020).

5. Mental Health Continuum Short Form (MHC-SF; Keyes, 2013; domestic adaptation: Reinhardt, 2014).

6. Schizotypal Personality Questionnaire Brief Revisited (SPQ-BR; Cohen et al., 2010; Hungarian adaptation: Kállai et al., 2018).

7. The Bergen Facebook Addiction Scale (BFAS; Andreassen, Torsheim, Brunborg, and Pallesen, 2012) uses six self-characteristic items to measure mood changes, attribution of importance, and withdrawal tension associated with Facebook use on a five-point Likert scale, looking back over the past 12 months.

8. Problematic Internet Use Questionnaire (PIUQ, Koronczai et al., 2011). Using a Likert scale, the 18-item questionnaire assesses possible problematic use of the Internet following the three-factor model of Internet addiction. It makes visible the possibly compulsive use that leads to the neglect of social relationships and expresses uncontrollable needs.

II.4. Data Analysis

Due to the importance of control over gender, the relationships between ITQ factors and adaptive and maladaptive factors were analysed using hierarchical multiple linear regression analysis, where the ITQ factors were the dependent variables. The independent variables were introduced into the models in two steps. In the first step, we took into account the effects of gender and age on ITQ factors. In the second step, we analysed the role of the TAS and SPQ-BR factors. Multi-collinearity was measured with the variance inflation factor (VIF).

II.6. Our results

The descriptive statistics of the examined samples can be found in Table 4. below.

Variables	n	Mean (SD)	Skewness	Kurtosis	Minimum-Maximum
ITQ-10 IN	717	24.9 (7.6)	-.02	-.66	7-42
ITQ-10 FOCUS	717	20.6 (4.8)	4.6	76.2	5-94
Video and TV	699	7.4 (7.8)	5.9	74.9	0-125
Book reading	701	2.9 (4.3)	3.4	16.3	0-40
Computer playing	710	1.5 (3.9)	4.4	25.1	0-35
Facebook	713	2.2 (3.3)	6.7	63.2	0-45
Other social media	715	1.4 (2.1)	3.8	22.1	0-21
BFAS	708	10.8 (4.4)	0.9	0.6	6-27
PIUQ	694	31.4 (9.8)	0.8	0.6	17-69
SPQ-BR	701	37.7 (18.2)	0.54	0.32	0-105
SCCS	703	42.5 (9.0)	-0.9	0.2	13-55
ASI	717	18.7 (11.1)	1.0	1.1	2 - 62

Table 4. Descriptive statistics. Abbreviations: ITQ = Immersive Tendencies Questionnaire Involvement (IN) and Focused Attention (FOCUS), VIDEO watching (in hour/week); book reading (in hour/day), computer playing (in hour/day); hanging on Facebook (in hour/day); other social media using (in hour/day); SCCS = Self-concept Clarity Scale, ASI = Anxiety Sensitivity Index SPQ-BR = Schizotypal Personality Questionnaire Brief Revisited, BFAS = Bergen Facebook Addiction Scale, PIUQ = Problematic Internet Usage Questionnaire.

The detailed analysis of the gender differences is outside of the scope of this study, but the relevant data can be found in Table 5. Males, as compared to females, more frequently watch videos, and play computer games. However, females more frequently use Facebook and read books. Other similar differences have not been detected.

Variables	Mean (SD)		z	p
	Male	Female		
ITQ-10 IN	24.73 (8.2)	24.96 (7.5)	-0.158	0.875
ITQ-10 FOCUS	21.26 (6.9)	20.36 (3.8)	-1.812	0.07
Video watching	8.32 (6.9)	7.16 (8.0)	-2.352	0.019
Book reading	2.29 (4.1)	3.1 (4.4)	-4.139	0.001
Computer playing	3.77 (6.3)	0.59(1.9)	-9.913	0.001
Facebook	2.31 (2.5)	2.06 (2.5)	-1.853	0.063
Other social media	1.4 (2.1)	1.4 (1.9)	-0.031	0.976
BSAF	10.04 (4.0)	11.05 (4.5)	-2.701	0.007
PIUQ	32.51 (9.8)	31.4 (9.8)	-1.946	0.052
SPQ-BR	36.89 (19.1)	38.08 (19.1)	-0.701	0.439
SCCS	44.08 (8.9)	43.31 (9.2)	-0.998	0.318
ASI	18.09 (10.64)	19.05 (11.2)	-1.838	0.066

Table 5. Gender differences in the examined variables; results of Mann-Whitney tests
 Abbreviations: ITQ = Immersive Tendencies Questionnaire, Involvement (IN) and Focused Attention (FOCUS); VIDEO watching (in hour/week); book reading (in hour/day), computer playing (in hour/day); hanging on Facebook (in hour/day); other social media using (in hour/week); SCCS = Self-concept Clarity Scale, ASI = Anxiety Sensitivity Index, SPQ-BR = Schizotypal Personality Questionnaire Brief Revisited, BFAS = Bergen Facebook Addiction Scale, PIHK = Problematic Internet Usage Questionnaire.

The result of the associations between the ITQ factors and the adaptive/maladaptive predispositions of personality shows the Table 6. These results were examined using partial correlational analysis controlling for gender according to the original hypothesis.

Variables	ITQ Involvement (IN)	ITQ Attention/Focus FOCUS
ITQ Involvement	-	0.150**
ITQ attention focus	0.150**	-
<i>Media usage frequency</i>		
Video watching	0.053	-0.064
Book reading	0.030	0.158**
Computer playing	0.099*	-0.044
Facebook hanging	0.100*	-0.046
Other social media using	0.141**	-0.025
<i>Problematic behaviour</i>		
BFAS	0.268**	-0.167**
PIUQ	0.351**	-0.230**
<i>Maladaptive predispositions</i>		
ASI	0.199**	-0.148**
SPQ-BR	0.330**	-0.148**
<i>Adaptive predispositions</i>		
SCCS	-0.397**	0.277**

* $p < 0,05$; ** $p < 0,01$.

Table 6. Associations between ITQ scales and measured variables; results of partial correlations controlled for gender. ITQ = Immersive Tendencies

Questionnaire, SCCS = Self-concept Clarity Scale, MHC-SF = Mental Health Continuum Short Form, SPQ-BR = Schizotypal Personality Questionnaire Brief Revisited, BFAS = Bergen Facebook Addiction Scale, PIUQ = Problematic Internet Usage Questionnaire.

The results in Table 6. show a correlation between ITQ immersion and the ITQ Focusing scale; however, their role is different in adaptive and maladaptive manifestations. Increased immersion is associated with higher problematic Facebook use (BFAS), problematic Internet use (PIUQ), elevated absorption (TAS), schizotypy (SPQ-BR), and low self-concept clarity. All of these points to a tendency towards maladaptive solutions. In addition, it is related to the indicated media usage preferences (for computer games, spending time on Facebook, and other social media applications).

Conversely, elevated ITQ Focusing is negatively related to maladaptive habits. Facebook (BFAS) and problematic internet use (PIUQ), schizotypy (SPQ-BR), and a positive correlation with adaptive personality characteristics (self-clarity and somatic, mental and psychological well-being (MHC-SF).

Furthermore, the ITQ-10 Ability to focus shows a positive relationship with book reading. The ITQ-10 scales allow it to be one of the maladaptive predispositions in relation to its important element, schizotypy, which expresses uncertainty about the self, we perform symptomatic analyses in the field of cognitive, affective and behavioural disorders.

The results of the hierarchical multiple linear regression analysis are shown below in Table 7.

Variables	ITQ		VIF
	Involvement	β	
	B		
Age	-.37***	-.03	1.00
Gender (Female>>Male)	.01	.09*	1.00
R^2	.14***	0,01*	
Age	-.31***	-.10**	1.08
Gender (Female>>Male)	-.01	.09*	1.02
SPQ-BR Cognitive	.15***	-.03	1.43
SPQ-BR Affective	-.05	-.25***	1.45
SPQ-BR Behavioural	.23***	-.07	1.71
ΔR^2	.09***	0,10***	

Remark: * $p < 0,05$; ** $p < 0,01$; *** $p < 0,001$. VIF = Vector Inflation Factor.

Table 7. Relationship between immersion tendencies and schizotypal personality traits; results of hierarchical multiple linear regression analyses.

The results of the linear regression analyses showed that schizotypal disorganized behavioural and cognitive control disorders are accompanied by increased immersion efforts. On the other hand, the values referring to Focusing ability show a significant relationship with the affective factors indicating a low interpersonal deficit. So, in this case, relationship-oriented positive affectivity can be assumed. Thus, the two components of the immersion tendency, immersion and focusing, have an opposite effect on the behavioural, cognitive, and affective aspects of schizotypy. The controlled awareness that develops as a result of the development of the Focusing ability, therefore, probably reduces one of the clearly visible symptoms of

schizotypal persons, strange speech, extravagant behaviour and a cognitive deficit burdened with references and magical thinking, by reducing the degree of immersion.

II. 7. Discussion

The results of our second study indicate that our version of the Immersion Trend Questionnaire (ITQ-10), can be used to determine the qualitative components of Immersion, whether the individual uses mediated digital or traditional means of communication, entertainment or media. The low correlation between ITQ-10 factors allows us to distinguish between two relatively different psychological components of immersion, Focusing and immersion based on personal participation. Theoretically, attention-focusing activity is primarily associated with consciously controlled executive functions. However, immersion based on personal involvement primarily concerns procedural, uncontrolled and affective functions.

Correlation analysis has shown that attention-focusing ability is coupled with coherent self-structure and psychological well-being, allowing for better personal relationships and maintaining self-control. Those with adequate Focusing abilities prefer traditional forms of entertainment and reading, and their use of digital media is driven by purpose. These results can also be related to data reported by Zhang et al., (2019). People with advanced Focusing skills are constructive when using the Internet and Facebook, and do not exhibit maladaptive behaviours. Conscious and controlled digital media use is associated with better cognitive and social skills, and the use of these technologies is associated with a low likelihood of developing addiction or problematic media use.

Our findings are consistent with studies that have indicated that those who use social media obsessively or problematically report more attention problems (Boer et al., 2020).

Our other findings showed that individuals who were more focused on their current activities during media use reported lower levels of problematic Internet and Facebook use, less social anxiety, cognitive impairment and unusual behavioural manifestations, less self-awareness, and a positive mental health outlook. These findings are consistent with the findings of Mittal and colleagues (2020) that values of self-clarity and self-coherence have a significant impact on personal, interpersonal and psychological well-being, adaptation to new situations.

These characteristics may also provide protection against the possible maladaptive effects of schizotypal predispositions. In contrast, the ITQ results show that low levels of Focusing Ability are directly correlated with deficits in self-coherence, schizotypal interpersonal traits, and maladaptive behaviour reflecting problematic Internet and Facebook use. When a person is unable to identify the true aspects of their self, then alienation consists of seeing their own faults in others and reacting to them in a negative and inflexible way. He can't tell the difference between what comes from himself and what comes from others. His behaviour is incoherent and maladaptive, ranging from reacting to the real aspects of others, to projecting his own negative psychological aspects onto people.

The analysis of the additional data of our study shows that individuals with a high schizotypy value are increasingly looking for alternative opportunities for self-fulfilment, and are therefore exposed to greater immersion in the digitally mediated environment, and are characterized by chronic Facebook use and maladaptive, abusive Internet use. These individuals are characterized by social isolation, isolation, strange speech and behaviour tendencies, their way of thinking is magical, they immerse themselves deeply in the scenes, and they create many theories based on unrealistic and sometimes delusional sources to demonstrate their presence and importance in the human community.

In addition to the lack of self-coherence related to personal commitment, as well as consciously directed and concentrated attention during computer games, the study also revealed other possible risk factors. Several parts of the problem refer to self-stability disorders. Strange speech, eccentric and disorganized behaviour, socially withdrawn attitude, and apathy are similar to the shortcomings of schizotypal persons. Social media is defined by Riva et al., (2010) from a psychosocial perspective as a “new digital space” that allows users to manage both their social network (organization, expansion, exploration and comparison) and social their identity (description and definition).

They believe that the spatial structure of hybridized social media networks has resulted in the emergence of "inter-reality", a new social space that is much more malleable and dynamic than previous social networks.

Discussion of the two studies together

Summarising the results of the presented two studies, it can be concluded that the dynamics of Focusing activity and Immersion based personal commitment, are decisive in the development of habits related to the adaptive or maladaptive use of digital media. At the same time, adequate interpersonal motivation, clarity of self-conceptual set, self-coherent articulation, and well-being, play a fundamental role in avoiding problematic use of digital media, even if the individual's tendency for immersion is increased. Thus, we found that the short form of the ITQ-10 includes two connected but relatively different forms of immersion tendencies. Immersion is characterized by weak self-boundaries and integration efforts, a low need for self-definition, and a set of maladaptive behaviours. Our data support research findings (Cicero, 2017; Hargitai et al., 2020) that low self-concept clarity leads to poor psychological adjustment and functioning, while high self-concept clarity leads to adaptive psychological adjustment and functioning. Low self-concept clarity is also associated with several types of psychopathology, including depression, anxiety, stress, and stress.

Furthermore, our results are consistent with the suggestion that an insecure self-state and the associated loneliness and low emotional availability manifest in typical behaviour patterns that are similar to schizotypal personality traits (Şalvarlı and Griffiths, 2019). Our findings also support the results obtained in the Hungarian sample (Király et al., 2015; Koronczai et al., 2019), according to which the emotional lability associated with anxiety, as well as conscientiousness, i.e. the low ability to control emotional, cognitive and behavioural activities, play a major role in the problematic in various areas of digital media use. However, our results show that people with an adaptive

digital media use strategy have a clear self-definition, higher well-being, mental and physical health, a lower degree of personality disorder involvement, and milder schizotypal traits can be detected. These people are also characterized by their ability to have higher mental control, adaptive potentials, and the ability to adequately distinguish between self-related and non-self-related events related to the ability to focus.

III. Integrative discussion

Finally, connecting my theoretical analyses of immersion and the self with the results of our empirical studies in an integrative way, in the final chapter of my dissertation I argue that immersion is a special form of psychological attachment. I think, immersion is the virtual game of the self and it serves to get to know the individual possible new psychological reality. What makes this bond special?

There are three main reasons. On the one hand, it is a relationship that does not require a real object of attachment, and yet, during immersion, the integrated physical, emotional, conscious and pre-conscious states are connected to the mediated world. On the other hand, the immersion relationship is a limited-time and one-sided connection in which the medium is only apropos. Thirdly, psychological immersion, similar to being in water, has regulated, serious conditions for someone to be present in an adaptive way. During immersion attachment, the metaphorical nature of the relationship is present: the guided crossing of the border or the stay on that border. That is why the important basic questions of psychological research are how individuals consciously and subconsciously operate by resolving emotional, cognitive and behavioural distances in various immersion situations.

Epilogue

In my dissertation, I discreetly argued that psychological immersion can be understood as the meeting of two mediums, an external and an internal medium, and what can be born from this meeting; play, appearance, reality, excitement, sorrow, fear, serenity, addiction, development, joy. One, the internal medium, is the self, while the other, the external medium, can be, for example, a book, a piece of music, a theatre performance or digital media. Both mediums have their own characteristics. A person can have physical, age and psychological characteristics, personality traits and personal stories, as a result of which the individual self can be clear or confused, simpler or more differentiated, coherent or incoherent, capable or incapable of constructive adaptation.

As a result of these characteristics, everyone is capable of forming different kinds of attachments and relationships with different media. At the same time, in the case of mediums, it is not only the way of use that matters, as each medium has its own character and language, and thus fundamentally influences a person's understanding of reality and their connection to themselves and others.

I believe that digital media is not a little different from the previous analogue electronic media, but fundamentally different from it. The question is, what and how are we able to see from this otherness, and then what do we do with all that we see? As with water immersion; a person not only gets a little wet when immersed in the sea, but is forced to see, feel, move, breathe differently than on land, otherwise he gets injured or drowns and drowns. Immersion is helped or hindered by the function of the self, similar to the diving equipment used when diving into the sea, which on the one hand keeps you alive, but

at the same time isolates and encases you in the medium that serves as the medium of immersion. The quality of the immersion relationship is largely determined by the quality of the self.

Using digital media, people can get to know themselves, extend, expand and develop themselves in a new way, provided they know and take seriously the character of the media, the fact that digital media has a different syntax, semantics, and context than a book, film or to other previous electronic media.

For this reason, digital media use, requires new behavioral, reality-creating, adaptive solutions that are different from the successful psychological operations of the mechanical-analog age.

However, the main question that remains before us, outside of the digital medium, how does one find oneself again, what kind of person, what kind of individual can one become, in the existential sense of the word? Will digital media help him to make this new kind of immersive experience not just a mass of information, a world of illusion for him, but to take possession of his experience, to elevate it into a personality building lived experience, a constructive vital force?

Acknowledgments

I would like to express my gratitude to my supervisor, Prof. Dr. János Kállai, as well as Prof. Dr. Tamás Bereczkei, the staff of the Institute of Behavioural Sciences of PTE ÁOK and the Institute of Psychology of PTE BTK for their support and ensuring appropriate working conditions. I would like to thanks to Rita Hargitai, Ernő Hupuczi, András Láng, László Martin,

Anikó Osváth, Sándor Rózsa and István Tiringer for their directness and joint work. Thank you all for your trust, support and contribution for the opportunity to work together!

I would like to special thanks to my parents and children for their genial patience and support!

The second presented research was made with the support of the National Research, Development and Innovation Office K-120334.

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VI. My Publications

Kállai, J., Vincze, G., Török, A.I., Hargitai, R., Rózsa, S., Hartung, I., Tamás, I., Láng, A. & Herold, R. (2021) Cognitive Gain or Handicap: Magical Ideation and Self-Absorption in Clinical and Non-clinical Participants, In: *Frontiers in psychology*, doi10.3389/fpsyg.2021.613.074

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Impact factor: 14.032 (based on MTA-MTO Scoring Method)