

Digital and interactive technologies in in-patient psychiatric treatment of adolescents – two years of experience with a technology-based therapeutic and pedagogic intervention (SOMOSA MediaLab^R)

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Introduction

In the last two decades, the impact of digital interactive technologies (DITs) on personal and professional life has increased exponentially. Today, the vast majority of the population in industrialized countries uses DITs on a daily basis as their main source of information and as a crucial platform for social exchange and recreation.

In the near future, body-attached devices will constantly provide the user with data of the world around and within him. Innovative DITs seem to offer endless possibilities. However, they also influence the manifestation and course of mental illnesses – especially in media-interested children and adolescents. Their specific usage of Web 2.0, interactive games, of quantified-self-technologies and of social media often reflects the underlying disorder and has to be understood and treated in this context.

Clinical Situation and developmental psychopathology

Healthy media-competent children and young people are looking for a constant comparison between the real world and the relevant persons of the virtual world, which also shows that the virtual world is often visited together with well-known real persons and friends. For children and young people threatened with the media, on the other hand, their personal virtual world actively forms a counter-world, a world of illusions, and then, in any case, an overwhelming first world, and seem to exist only in real life. They neglect the forthcoming development tasks, which ultimately leads to conspicuousness in the following areas:

- Acquiring an adequate gender role
- Designing relationships with the other sex
- Obtaining an intrafamilial autonomy
- Emotional independence from the parents
- Acceptance of one's body and its changes
- Acquisition of professional knowledge and preparation for gainful employment
- Learning a responsible social behavior
- Acceptance and perception of citizens' roles in society
- Finding and maintaining functional friend contacts

Clinically relevant relevant typologies and classifications

Criteria that allow diagnostics for pathological on-line play behavior and only these (!) were included in the fifth version of the DSM in 2013. In addition, a classification has always been possible in the ICD-10 with (auxiliary) diagnosis F63.8.

A simple game typology is recommended, as proposed by the USK (Independent Game Commission) for Germany (Table 1).

In the early days of WWW 2.0 it was Kimberly Young who developed her still very useful scheme of internet-related disorders, seen in Table 2.

Table 1: Characteristic typology of games according to USK

Shooter	Strategy	Simulation	Arcade	Role Game
Ego-shooter	Creative strategy	Civil simulation	Racer	Online role game
1st-person	Military strategy	Military simulation	Beat'em up	MMPORG
3rd person			Shoot'em up	Action-based
Tactic shooter			Music shows	
Online shooter				

Table 2: Phenomenological subtypes of media-related disorders

Online gaming	preoccupation with different online-games, mainly related to MMORPG's (Massively Multiplayer Online Role-Playing Games)
Online gambling	preoccupation with different gambling sites (poker and further card-games, online-casinos, online betting)
Information seeking	excessively surfing the Internet for the gathering of irrelevant and superfluous information that doesn't affect one's life or interests directly
Online communities	Pre-occupation with communication-based platforms (social networks; chats; message boards)
Online pornography	preoccupation with pornographic offers; excessively researching for pornographic material
Online shopping	excessive and uncontrolled buying of (superfluous) items

Theoretical Approaches

Psychological models focus on learning, coping, conflict dynamics, motivation and family-related factors. Biologically oriented models focus on changes in the brain and body organism (e.g. so-called addiction memory).

Sociological models emphasize the macro-social embedding of addiction. This includes the social definition of "addiction", "abuse", etc., which can vary historically and regionally. Some authors describe the pathological use of the Internet in the sense of a social-cognitive approach as a learned deficit self-regulation process.

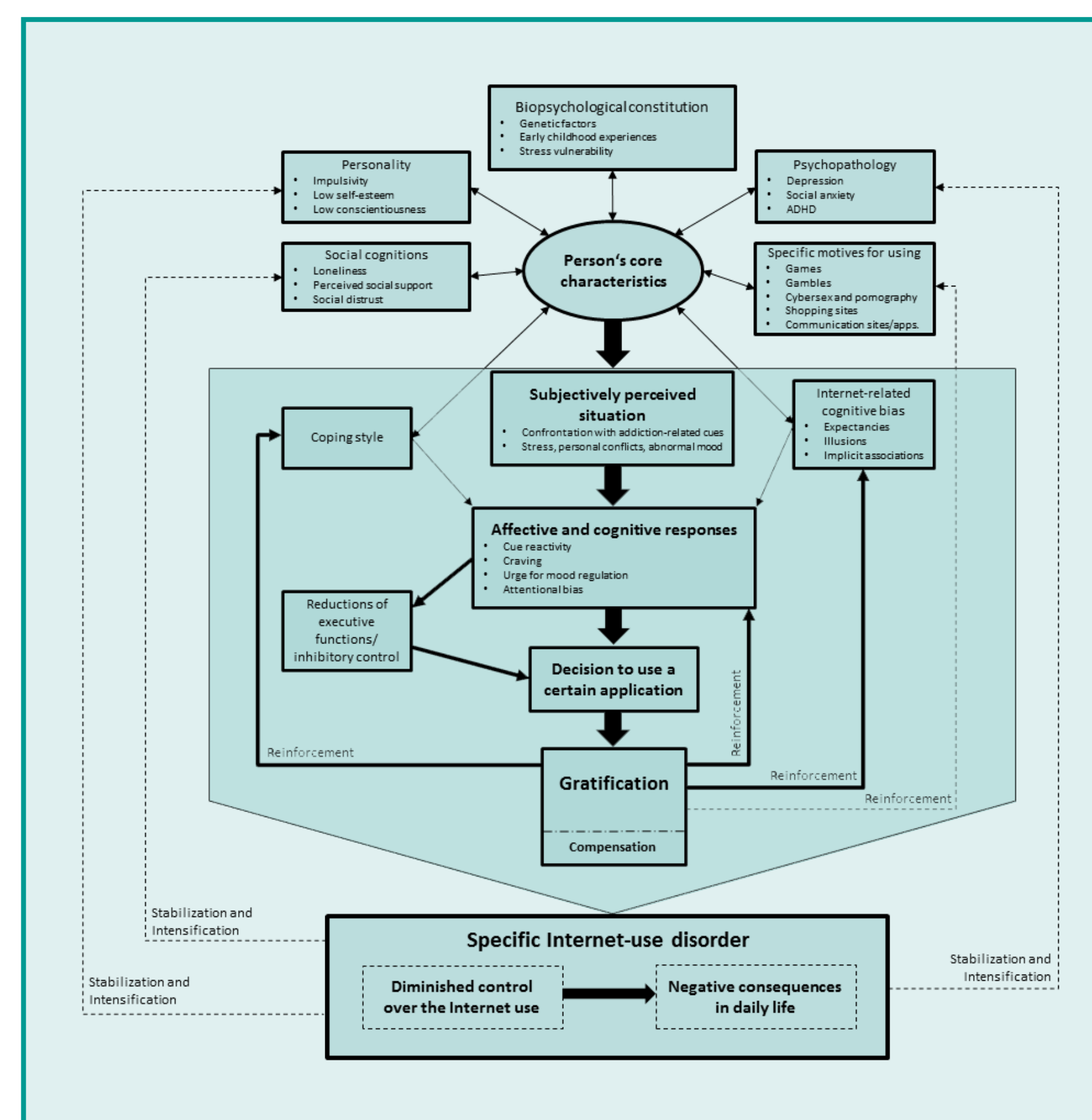
The established transtheoretical model which describes the development of addiction and the ending of consumption as a circular process (circulus vitiosus), which can be used differently at any point in the process, can also be helpful for individual understanding.

The biopsychosocial model for the development of diseases, which is often cited in childhood and juvenile psychiatric diagnosis and treatment, and which is a reflection of the interplay between protective and risk factors interacting in different developmental phases, is also well suited to the study of etiological relationships in regard to pathological media use.

Pathological PC and Internet use can be interpreted as a dysfunctional behavioral pattern, which can be seen as a result of excessive or even compulsive use of the Internet, leading to negative consequences on the mental, social and physical level. In a cognitive behavioral model (Figure 1), two forms of pathological PC and Internet use, one specific and one generalized, are distinguished. The specific form refers to the pathological use of activities that could be performed outside the Internet, such as online gambling or online pornography. The generalized form of pathological PC and Internet use, on the other hand, is characterized by the excessive use of internet activities accessible exclusively via the Internet, e.g. chat, e-mailing and online role-playing games.

Brand et al. recently (2016) proposed a model of pathological media and internet use, which will be very useful to plan interventions (fig. 1).

Figure 1: The I-Pace model of pathological internet and media use



Therapy phases

According to today's knowledge and, as a matter of course, tailored to the individual case, the therapy usually comprises three to four similar phases, based upon the basic principles of in-patient therapy in adolescents:

- Treating close to the adolescents real life environment
- Realistic therapy planning with pragmatic goals
- Peer group reference, virtual and offline
- Exemplary function of age and prosocial orientation
- Salutogenetic and resource-oriented basic approach
- Knowledge of social and media change
- Help with psycho-social transitions and transitions

1st phase

This includes

- Creation of a problem awareness,
- development of a common fault and problem concept,
- complete abstinence from electronic media for at least two weeks (all possible devices),
- deepened diagnosis of mental and somatic diseases, psychoeducation of the parents and
- a rigorous analysis of the school and training situation.

In this phase, the drop-off rate is rather high, the motivating conversation is of crucial importance, and the question of motivation (pressure by school, training center or parents) should also be discussed. In difficult cases and in chronic progression of the disease, this phase can only be achieved in a daily clinical setting or full-station.

2nd phase

After elaboration of a basic motivation and diagnostics of the comorbid existing psychiatric disorders, the specific treatment of the comorbid disorder by means of psychotherapy in the individual or group context, further psychoeducation and possibly pharmacotherapy of the mental illness takes place in this phase. At the same time, a re-recording of activities on the PC is based on the school and performance context. The focus is not on the interactive and entertaining aspects, but also on the other hand, and the appropriate use of the computer for other clearly defined goals, mostly from the school sector. Since the basically positive playful handling of the PC has been lost and an almost compulsive addictive use, partly even with self-treatment characteristics, has made room, the playful part is of no importance in this phase.

Rather, pro-social playful and, of course, distracting aspects are also to be found in the real world. The contact with other family members, the sports club, school as well as other positively experienced interaction possibilities in the real "offline world" is to be given complete attention.

The extent to which participation in the extremely important social networks such as Facebook etc. is to be allowed in this phase depends on the embedding of the young person in these networks, their pro-social character and their connection with real contacts.

In the future, this area will also have to be given greater importance in diagnostics, as many children and young people now live a large part of their social life in such virtual networks with a constant stream of interchange of everyday information such as children and adolescents (especially girls) have always done "offline". A complete absence of the young person from these communication paths can lead to a "missing" of important appointments or the like, and can lead to social isolation. This fact illustrates how relevant the acquisition of a constructive media competence for current and future generations appears.

3rd phase

In the third phase, the aim is to establish a psychotherapy of existing mental disorders, to define the role of the parents and to integrate their media consumption in the long term, as well as to test the return to a playfully exploratory behavior.

In this phase it is usually shown whether the young person has recognized for himself the dependen-

cy potential of, for example, World of Warcraft (WoW) or League of Legends (LoL), an online-based role playing game, actively avoiding any further contact so as not to fall into old behaviors.

In the sense of the "cue exposure", a concept of the identification of key stimuli and thus triggering addictive behaviors, it has to be checked whether certain graphical, acoustic and interactional patterns in certain computer games induce exactly the dependent behavior. Here one can find references to an existing "addiction memory" with regard to certain games.

At this stage, an open dialogue with the child and adolescent should lead to the return of independent competence in dealing with the potentially addictive medium.

Through better integration in peer groups, which use interactive media and social activities in the real world, as well as recaptured school activity, the dependency-inducing aspects are, however, automatically turned into the background in many cases.

The "Modellstation SOMOSA"-concept

In 1995 the "Modellstation SOMOSA" has been founded by (adolescent) psychiatrists and clinical social workers, granted by the regional juvenile care authorities, the health care system/insurances and the Federal Ministry of Justice in Bern.

Its aim was –and will be– to give an adequate multisystemic framework for boys between 14 and 18 years, who are psychiatrically multimorbid and show pervasive antisocial behaviour.

These adolescents seem to be "too ill" for juvenile justice or youth care authorities and on the other hand "too anti-social" to be integrated in regular adolescent psychiatry and psychotherapy.

The average length of stay is nine months to one year, every patient has got 2-3 psychotherapy sessions per week and is part of a well-structured work and leisure time program. Medication treatment (mostly stimulants and neuroleptics) is used in 50% of the cases.

The average age is 16.5 years, the average IQ is 96 (75-120), the average length of former treatment 10.5 years (3-12). Migration of one parent can be found in 60%, only 5% have both parents migrated, 95% of all patients have Swiss nationality.

These patients represent a very specific selection of severe otherwise un-treatable individuals with severely reduced psychosocial resources in a very well-funded and effectively organised mental health care system in the metropolis region (Zurich) of a highly industrialised country.

The SOMOSA Medialab^R Project

A working group consisting of neuropsychologists, clinical psychologists, pedagogic experts, a professional game-tester, and developmental psychiatrists developed the SOMOSA MediaLab^R concept. It includes in-depth neuropsychological testing, cognitive remediation, a real-life office simulation setting, a set of individually tailored computer games, creative software programs, a high-end music recording and producing facility, and the possibility to optimize and critically reflect the social media behavior of the patients. An overview of the weekly action plan is shown in table 3.

The programme is obligatory for every in-patient of the hospital and lasts for six to twelve weeks.

Table 3: Weekly schedule of programme participants

Stundenplan Medienwerkstatt					
Max Mustermann	Arbeitsplatz: C			Medienwerkstattwoche: 1	
Kalenderwoche: 1					
Wochenbeginn: 01.01.2016					
	Montag	Dienstag	Mittwoch	Donnerstag	Freitag
	01.01.2016	02.01.2016	03.01.2016	04.01.2016	05.01.2016
08.00–09.40 Uhr	Newsround	Newsround	Newsround	Newsround	Medienwerkstatt reinigen Wochenbesprechung
09.40–10.00 Uhr	Pause	Pause	Pause	Pause	Pause
10.00–11.30 Uhr	Sport mit AHA	Graphic Design Übungen Gimp	Persönliches Projekt	Office Word	Kochen mit AHA
11.30–11.55 Uhr		Kognitives Training	Kognitives Training	Kognitives Training	
11.55–13.30 Uhr	Mittagspause	Mittagspause	Mittagspause	Mittagspause	Mittagspause
13.30–15.15 Uhr	(WWW abklären) Graphic Design Namensschild	Office Power Point	Medienkompetenz	Office Excel 10-Finger-System	Wochenabschluss mit AHA
15.15–15.30 Uhr	Pause	Pause	Pause	Pause	Nur bis 14.50
15.30–17.00 Uhr	Serious Gaming nur bis 16.30 Uhr	Ausflug mit AHA	Medienkompetenz	Sport mit WG	

Clinical experiences 2014–2016

The first phase of the implementation of the SOMOSA MediaLab^R program integrated patients with ASS, PTSD, and hyper-impulsivity due to ADHD or dissocial developments. The modular concept and the individualized set of methods of DITs provided a well-accepted and personalized approach. The adolescents were in very close cooperation with the professional team to ameliorate the concept. Motivational aspects played a key role in adherence to the tight schedule and multiple demands of the MediaLab^R program. In particular patients with social phobias and dependent personalities got positive feedbacks due to group activities.

Future Developments

In a next phase of the SOMOSA MediaLab^R project we aim to develop and integrate even more so-called "serious games" into the multimodal treatment program. Serious games can target specific symptoms, such as social anxiety, delusions, or impulse control problems in a playful manner through a computer game. The feasibility of integrating virtual reality techniques and real-time biofeedback into this setting will be evaluated as well.

Summary

As adolescents with severe and comorbid mental disorders show specific problems in age- and content-adequate usage of electronic media, we advocate an intensified integration of DITs in inpatient therapeutic institutions for children and adolescents. The SOMOSA MediaLab^R concept might constitute a promising first step towards the integration of DITs in multisystemic therapy in this age group.

References

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