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# Attachment-Based Therapy for Addiction and Trauma in Children and Adolescents

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**To cite this article:**

Frank Maria Fischer. Attachment-Based Therapy for Addiction and Trauma in Children and Adolescents. *American Journal of Pediatrics*. Vol. 7, No. 3, 2021, pp. 130-136. doi: 10.11648/j.ajp.20210703.18

**Received:** June 23, 2021; **Accepted:** July 21, 2021; **Published:** July 27, 2021

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**Abstract:** This article is about why children and adolescents with traumatic experiences are particularly at risk of becoming severely addicted. It addresses the question of why it is so difficult for them to feel safe in therapeutic relationships. It will be examined to what extent the epidemiology of addiction, trauma, and attachment disorder provides evidence as to whether there is a significant relationship among the disorders that contributes to the complicated and lengthy nature of therapy for adolescents who have become severely addicted. It will describe how the reward system, attachment system, and anxiety-stress system (limbic system) interact at the neurobiological level. As a result of the study, it is shown that the role of the reward system in understanding the development of dependence cannot be understood neurophysiologically without the role of attachment and anxiety-stress. One conclusion from this is that this relationship should be taken into account therapeutically in order to be able to expand the spectrum of therapeutic intervention options and to be able to make the therapy of severe dependence disorders in adolescence more successful. Methodologically, two levels of description are compared here: On the first level, the neurobiological research findings are presented as the connection between addiction, trauma and attachment; on the second level, the significance of the research findings for therapeutic practice is concretely described and empirically demonstrated on the basis of a case report. In conclusion, it is shown that understanding the neurobiological function of the implicit memory systems of reward, attachment, and anxiety/stress has a central importance for the further development of addiction therapy for dependent adolescents.

**Keywords:** Adolescents, Addiction, Trauma, Dissociation, Ego-State-Disorder, Therapy, Attachment Disorder, Neurobiology

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## 1. Introduction: Why Dependent Young People Seek and Find Little Help

Adolescents with addictive disorders still have a hard time in child and adolescent psychiatry; they don't find a place there. Relapses into drug use and difficult social behavior make therapy a challenge. Addicted adolescents are also still little accepted in their disorder, but rather seen as socially weak, manipulative and dissocial. But there is something else the adolescents are blamed for: Their complicated attachment behaviors and destructiveness toward themselves or others. They change faces, appear unpredictable, are aggressive or overadjusted and promiscuous or disinhibited. You don't know where you stand with them. The reason for this often lies in an early attachment traumatization that no one can see

anymore and that the adolescents cannot tell you about. These adolescents do not understand themselves and have no language for the stress and inner emptiness that they try to numb in addiction. What they also do not know: The neurobiological and dynamic mechanisms of addiction, trauma, and attachment disorders are similar and reinforce each other as vicious cycles. They are helpless to this "programming" of implicit memory of reward, attachment, and anxiety/stress because the experiences are inaccessible linguistically, mnestically, and cognitively. Clarifying this connection has many effects on understanding addiction and is an essential strategy of psychoeducation in therapy. On the one hand, the drug as a chemical dissociation agent (self-numbing, self-medication hypothesis according to Khantzian [29]) becomes recognizable in its protective function in trauma disorders; on the other hand, it becomes apparent how

similarly addiction and trauma memory function [28]. This results in the possibility for the therapy of addiction to benefit from the findings of trauma therapy and vice versa.

In fact, many methods of trauma treatment are shown to be applicable to addiction [7, 25, 20]. Attachment research adds to this connection with a pre-linguistic foundation that spans life.

An integrative approach will be presented here very briefly, which has proven itself for many years in the inpatient and outpatient therapy of our clinic and is being further developed [7, 8, 9, 24]. An example is used to show that the methods of addiction and trauma treatment complement each other and that attachment theory is the unifying concept.

## 2. Epidemiology: Study Situation

### 2.1. Addiction and Trauma as Comorbidity

In the meantime, the significant frequency of comorbidity, especially of addiction and trauma disorders, is statistically well documented [23, 18, 5, 6]. Especially in the case history of severely and early drug-dependent adolescents, traumatic attachment experiences, losses, violence and addiction in the family, upbringing in institutions and abuse are typical and almost expected key data. One study that has become very well known due to high numbers of subjects is the ACE (Adverse Childhood Experiences) study [13]. A significant relationship in terms of a dose-response relationship was shown between the number of risk factors and the onset of drug use (or drug dependence). Also, the number of stress factors had a significance for the age of onset of drug use: the more stress factors there were, the earlier adolescents (under 14 years of age) started using. Fergusson and Lynskey [12] studied a 1265-person New Zealand birth cohort up to age 18. Here, significant associations were found between sexual abuse and substance-related disorders [23]. Schäfer et al [20] surveyed 100 patients with multiple drug use after forced sexual intercourse before age 16. 50% of female and 40% of male patients were affected.

### 2.2. Addiction and Attachment Disorder in Children and Adolescents

In the medical history of addicted adolescents, there are often living conditions with subtle emotional violence, inadequate care, deprivation [4, 30, 7], insecure relationship offers by adults and lack of support [17]. The result is "attachment trauma", which does not yet have its own diagnosis in ICD-10, but from a neurobiological point of view it is clear that it can play a major role in the later development of addiction and other comorbid secondary disorders [17, 22, 1, 3]. In addition to the classic definition of trauma, attachment theory [4, 30, 2] comes into view here, pointing out how important a stable emotional attachment is for a child's healthy development. DSM and ICD have so far required that these be "events or occurrences of extraordinary threat of catastrophic magnitude." However, the fact that these experiences of threat can be very subjective and, at the

attachment level, very subtly cruel and emotionally insidiously chronic (e.g., transgenerational inheritance of disorganized attachment behavior through unpredictably changing relationship offers and terminations by parents) is not sufficiently taken into account in the definition of the classification systems. In such a case, there are no typical life events, but rather experiences of deficiency and deprivation that have become chronic and are almost perceived as normality by the affected children. Later they will not be able to remember their childhood and a trauma map remains anamnestically "foggy". Michaela Huber has spoken of the "cork on the bottle" in this context: Many years later, reenactments (renewed trauma situations) lead to the reactivation of a childhood scene in which traumatic attachment experiences become recognizable and the childhood traumatic life context becomes visible [16]. Thus, it is about "early interpersonal traumatizations" [20], which remain unconscious like a fog and form the silent traumatic normality of the addict, who does not know any other attachment experiences at all and substitutes the chronic lack by drugs, alcohol or PC game. With Riedesser and Fischer [11], trauma can be described as a "vital discrepancy experience between threatening situational factors and individual coping possibilities, which is accompanied by feelings of helplessness and defenselessness and defenceless abandonment, thus causing a permanent shaking of self-understanding and understanding of the world." This definition shows that it is the attachment context that plays an important role in the degree of traumatization: The defenselessness of absent or insecure attachment makes vulnerable to the traumatic experience of being abandoned. The more secure and protected a child is through good attachments, the more stable he or she is in relation to traumatic irritations. However, if a massive traumatic experience breaks through the security of attachment, this has devastating consequences for children at the attachment level, namely a permanent shaking of their understanding of themselves and the world [14, 15, 21, 34, 10]. Here, addiction plays the role of a symptom-reducing self-medication, but also that of a bonding agent. As a "bonding agent" in the social context, the addictive substance generates good feelings where social reinforcement (praise, recognition, care, love, friendship) can no longer take place due to a lack of bonding security. Trust in this possibility of social reward is destroyed due to traumatic experiences. The dependence on the "transitional object" [33] drug has its origin in such a situation.

## 3. A Typical Case Study

Melanie (15) came to us for addiction counseling because she used various drugs (crystal meth, cocaine, speed, MDMA, ecstasy, cannabis, alcohol, etc.) and was picked up on the street. She didn't go to school anymore, moved with a girl gang through the night, was absent, was conspicuous by thefts, damage to property, BTM-violation and bodily harm. The Youth Welfare Office had no influence, the single

depressive mother had not for a long time. Melanie's only bond was with her little sister, for whom she felt responsible and for whom she took on the mother-substitute role. She financed her massive drug consumption through nightly street fights in which she used considerable violence to fight boys (often from the right-wing scene), often seriously injuring them. Melanie described her mental state during the fights like a traumatic dissociation: while she was going after her threatening opponent, she stepped "out of her body" and looked at herself "from the outside" as she bullied what was actually an overpowering opponent with her feet and fists. In the process, she experienced no pain whatsoever; she was "numb." Before the fights, she consumed drugs that were supposed to give her an additional security in intoxication. In contact, Melanie alternated between different behaviors: She could be lively, friendly, and social, but also depressed and listless, small and intimidated, quick-tempered, threatening, and emotionally cold, or motherly and protective. The relationship design changed depending on the condition.

#### 4. Withdrawal and Dissociation

In the following, based on Melanie's therapeutic course, an addiction therapy stage model is presented that is oriented to trauma therapy templates and at the same time is attachment-based (Integrative Addiction and Trauma Therapy for Children and Adolescents, ISTKJ (IATCA), [7]).

1. Stage: withdrawal and stabilization.
2. Stage: Psychoeducation and resource development.
3. Stage: Correcting attachment experience.
4. Stage: Confrontation of addiction and trauma.
5. Stage: Integration, stress testing and relapse prevention.

The connection between addiction and trauma usually becomes apparent during withdrawal.

After admission to the addiction center "Teen Spirit Island", Melanie experienced a condition that very many patients develop after a few days: In withdrawal, she not only faced addiction pressure and withdrawal symptoms (nausea, tremors, feeling cold, sweating, pain, anxiety), but after a few days, distressing memories and thoughts (intrusions) began to intrude, accompanied by sleep disturbances and increasing nervousness and jumpiness. Dissociative states occurred, in which Melanie seemed absent, fearful, or depressed, and abortive thoughts and the desire to run away occurred. The past became overwhelming and spiraled out of control. Now Melanie was confronted with the fact that she had used drugs to create "chemical dissociation" as self-medication. By this is meant the following: she had used the intoxication as self-numbing to suppress dissociative trauma symptoms such as flashbacks. This allowed her to maintain an illusion of self-efficacy by convincing herself that she was in control of the intoxication and its duration.

The problem with addiction therapy is usually that patients cannot stand the loss of self-intoxication and the return of traumatic memories and drop out of therapy. Withdrawal and addiction pressure are stressful. If surprising trauma symptoms are added, it becomes too much. What to do?

Melanie learned in Stage 1 from the first day to use stabilization techniques (e.g., vault exercise, safe place, see [19], resources, reorientation techniques, skills, mindfulness and relaxation exercises in case trauma symptoms might emerge. So she was prepared, even though the trauma diagnosis was not yet known. It often isn't; patients don't talk about it. Therefore, everyone learns to stabilize themselves right from the start. When the dissociation comes, they can maintain their self-efficacy because they are not unprepared. Psychoeducation (explaining models of illness and the role of comorbidity) follows (Stage 2) once patients are stable enough and ready to deal with the causes of their illness.

#### 5. The Corrective Binding Experience

Often, however, withdrawal treatment (medication, acupuncture, resource list) with stabilization and educational psychoeducation is not sufficient to bring the adolescents into a good therapeutic relationship. Rather, many adolescents show significant abnormalities on the attachment level already in the withdrawal phase, which often blocks stabilization or later confrontational trauma therapy. The example of Melanie illustrates this:

Melanie, after an initial motivated phase in which she appeared socially competent, outgoing, distressed, cooperative, and reflective, began to revert to her neglected, threatening gang behavior. She shed her girly clothes and wore milieu attire such as track pants, bomber jacket, military boots, and studded belts. Her long hair disappeared in a knotted braid, her cosmetics faded, and her otherwise girlishly soft face became hard and coarse. Melanie spoke close to the scene, using different words than usual, now provocative, threatening, hurtful, caustic, appearing combative and distant. In the group, she was divisive, appeared mischievous, and had a destructive effect on the trusting atmosphere between the patients. She alternated between hot anger and cold, calculating sadism. It was difficult to confront her because she could not accept the feedback and mirroring. The attachment behavior was highly reactive: on the one hand, Melanie sought closeness in direct conflict, sometimes even briefly recognizing parts that needed help, on the other hand, she destroyed all relationships with therapists, caregivers and fellow patients) who courted trust and wanted to offer help. Melanie oscillated between hopelessness and cruelty; her attachment behavior corresponded to reactive attachment disorder (F94.1). It was very difficult to reinforce Melanie socially in this situation because she herself was destroying the trust that was necessary for the therapeutic relationship. At the same time, she was looking for attention. If she received it, she appeared dismissive and ignorant. In this phase of therapy (stage 3), an attempt was made to establish a corrective attachment experience: Melanie was permanently mirrored in her ambivalent behavior. Reference was made to the child's primary attachment experiences (mother and father) in order to be able to analyze the transgenerational inheritance of the attachment disorder. The strong conflict of loyalty with the

mother became visible and so did its transfer to the dynamics in the ward. It was important for Melanie to realize that she was recognized in her reactivity (on-off attachment behavior) and not rejected. Clear attachment behavior with expression of clear and unambiguous attachment desires were validated and could be socially reinforced after a certain practice time.

## 6. Confronting Addiction and Trauma: Finding a Language

What happens next when patients have finally realized that they are traumatized and have been using drugs to manage their symptoms? If the adolescents are stable enough after their withdrawals (stage 1), have sufficient information about their disorder and about interventions (stage 2), and their attachment behavior has become the focus of interventions (stage 3), it is often necessary to confront traumatic experiences in order to be able to process them (stage 4). They have to experience that old traumatic memories cannot be turned off and that new, previously "forgotten" memories push to the surface of consciousness. In addition, there are agonizing affects of guilt and shame. These are typical of both addiction and trauma. Often these feelings are in the foreground, while the language is missing to be able to express or understand the traumatic experiences themselves (implicit memory).

Melanie, like most adolescents, was speechless at the beginning of therapy. She experienced herself as inferior, as a junky, as useless and lost. With dissociation and flashbacks came shame and guilt as typical emotions associated with trauma. Shame and guilt were categorized and identified as triggers for addictive pressure and dissociation. Melanie learned to distance herself and question evaluations. In this way, the addiction pressure and the thoughts of breaking off also became controllable.

A trauma map was created on which, for the first time, experiences of abuse and violence were entered and named on a life timeline. It became clear that Melanie had had to endure violence and sexual assault from a very early age. However, she was now able to talk about it for the first time because she was able to distance herself sufficiently and stabilize herself without dissociating massively. During the confrontation, addictive pressure and thoughts of breaking off occurred again and again, but these could also be confronted. Dealing with guilt and shame as guiding effects of addiction and trauma was important: the emergence of guilt and shame could be traced back to a stressful origin in memory. The aim of the work with the trauma map was first of all the preparation of a trauma-therapeutic confrontation (e.g. by means of screen technique and/or EMDR). Here, once again, the possibility of using trauma-therapeutic methods for working on addictive behavior becomes apparent: Shame and guilt are typical triggers for both dissociation and addictive pressure. The shame of being a junky leads to renewed use, which is a vicious cycle. The shame of being a victim also fits this pattern. Addicts also

use their victim status to justify their use. This is a second vicious cycle and another dynamic link between addiction and trauma. On the level of conditioning, trauma triggers are often also triggers for addictive pressure; it is not uncommon for traumatic experiences under the influence of drugs to have been reenacted in intoxication, and so traumatic dissociation often combines with the chemical dissociation of intoxication, so that at some point the two can no longer be separated. This not infrequently makes trauma confrontation somewhat complicated, but at the same time also holds the chance that one can delete the trigger for addiction pressure by means of trauma confrontation.

In fact, an EMDR addiction protocol has been developed [15] that attempts to process addiction pressure triggers through bilateral stimulation (controlled sets of eye movements, see [32]). This is shown to be most successful with the addicted and trauma patients in whom the traumatic triggers are also the addictive pressures (addictive pressures in response to the stressful memories). The screen technique (a memory is presented as if running on a screen, with the inner image alienated, e.g., discolored in black and white, slowed down, sped up, or soundless, in order to better endure the memory and thus become accustomed to it) is particularly important for working on shame and guilt, both in relation to addiction and trauma.

However, it quickly became clear in Melanie's case that trauma confrontation was not possible so quickly, since she alternated between different states depending on the trigger and on the one hand wanted a change in symptomatology, but on the other hand destructively rejected therapeutic offers that would have meant confrontation with destructive feelings and thoughts. It was apparently necessary to understand why Melanie herself began to behave destructively, dissociatively, and self-injuring when confronted with memories that signified these very behaviors on the perpetrator's side.

## 7. Structural Dissociation: Ego-States and "Inner Stunners"

Often, the phase of addiction and trauma confrontation (stage 4) reveals the problem just described: the patient changes in behavior depending on the trigger and exhibits behavior that indicates a traumatic perpetrator-victim dynamic or early childhood deprivation. The adolescents suddenly become perpetrators or victims themselves, or they get caught in the maelstrom of regression, which points to early traumatic attachment experiences. Typically, therapy enters a crisis, thoughts of dropping out and addictive pressures emerge. At this point in the therapy it becomes clear that often the extent of the trauma sequelae disorder (the extent of dissociation) is not apparent from the beginning. Only in the course does it become apparent (as in Melanie's case, for example) that there is not just a simple or complex PTSD (post-traumatic stress disorder), but a structural dissociative disorder of the personality based on

early childhood traumatization. What this means will be briefly explained below using Melanie's example:

In individual therapy, it was possible to work out various dissociated ego parts (ego states, see [27]) with Melanie. For example, she was able to name a victim state that reacted fearfully, submissively, and overadapted. If Melanie was in this ego state, she became small and exhibited unselective attachment behavior with submission, sexualization, overadaptation, and anticipatory obedience. It quickly became clear that Melanie had developed this behavior as a child out of a threat and had split it off as an ego part. If she was reminded of the earlier threat by something in the here & now (trigger), she switched to this part (ego state) without really noticing it. But there were also other states in Melanie that tried to prevent exactly this repetition: The addictive part (the "inner stunner") and the perpetrator part (the perpetrator introject). The emergence and function of these parts can be described as follows: The part referred to as the perpetrator-introject arises as a survival mechanism through a kind of identification with the aggressor. If the victim wants to survive, he must empathically empathize with a sadistic counterpart in order to understand which adaptation strategy could ensure survival. In the process, characteristics of the perpetrator become a split-off (freezing!) part of the self through introjection. This part is later triggerable, self and/or other destructive, cold, sadistic, aggressive and tormenting. This side came out clearly in Melanie's case when she developed the desire to destroy the perpetrator by accusing him in court. She also wanted to destroy the part of herself that was identical with the perpetrator. And this resisted and took the lead on the "inner stage": Melanie became threatening and dropped out of the therapeutic alliance. This was destructive, but had the therapeutic advantage that it was possible to work with the perpetrator introject. Practically, this was difficult as long as other parts were not approachable to "sit at the table" with the perpetrator introject. So far, Melanie's addictive part, the "inner stunner," had had a calming effect on the Perpetrator Introject. Its function had been to regulate the destructiveness of the aggressive perpetrator side and to bring an escalation under control. Addictive pressure and withdrawal into intoxication served Melanie to avoid self-destructive escalation. The protective function of various dysfunctional ego states became apparent: the perpetrator introject and "inner stunner" had the joint task of preventing the submissive, promiscuous victim state from selling itself for drugs and again handing itself over to an abusive tormentor. She switched to the abuser side when in danger (trigger) and preferred to do violence to herself and others while intoxicated. In doing so, she was able to use a dissociative state in which she felt no pain. She fought in the ring against muscle-bound thugs from the Nazi scene, won, and thus earned her money for drugs. A heroic attempt at a solution to preserve dignity and self-efficacy.

Diagnostically, it can be stated that Melanie had a structural dissociative disorder [31, 28]. Melanie showed symptoms of dissociative identity disorder (DID, formerly "multiple personality"), but with the difference that the

individual ego-states knew about each other and were aware of the change between the states. The Correct Diagnosis was therefore "Ego-State Disorder" (ESD, [28]), but this is not yet included in ICD-10 / DSM-V. In Melanie's case, however, it became clear that the addiction and trauma therapy depended decisively on whether it would be possible to include all ego parts (ego states) in the further therapy and to make this dysfunctionality of the acting parts thematizable on the "inner stage" [26]. The function of the "inner anesthetizer" had to be developed anew and the perpetrator part had to be calmed down or used in a different way in order to be able to bring the triggerable addiction pressure under control.

## 8. Relapse Prevention: Seeking Safety

Melanie's example clearly shows how important it is for addiction-trauma-bonding work with structurally dissociatively disturbed and severely dependent adolescents to recognize all parts in their respective protective function. Only then could it be clarified for Melanie on the "inner stage" to what extent confrontational trauma therapy and addiction therapy were possible at all.

This also determined the success of further relapse prevention (stage 5). It was decisive that the most important goal of all ego-states was to establish security and self-efficacy. Only then could it be recognized that the current actions of the parts were dysfunctional and destructive, i.e. not conducive to security. New goals, motives and tasks could be found for the individual parts, which became increasingly cooperative. Melanie abandoned her desire to drag the tormentor (rapist, dealer, perpetrator) to court because she realized that this would make her trauma therapy impossible and that she was destroying herself because she was trying to destroy her own perpetrator part. The more power she gave him. The paradox was, however, that the more she learned to accept this part, the more control she regained over her "inner stage." Melanie was able to put socially competent sides forward again, flanked by combative and playful parts. The abuser part was given the task of protecting the social and child parts. A decisive step for the addiction therapy: This cleared the way to be able to look for another task for the "inner stunner" as well. He was given the task of supervising relapse prevention. Actually, many of the above measures belong in an extended addiction and trauma therapy concept of relapse prevention with stress testing (level 5). A good manual has been published under the title "Seeking Safety" [25]. There are many aspects to it that are also found there: Practicing stabilization techniques already mentioned, finding skill chains to reduce extreme stress, installing reorientation measures to get out of a dissociative state. These techniques can also be used with addictive pressure. Relapse prevention includes developing resources, skills and enjoyable activities that do good and can distract from addictive pressure and negative thoughts or feelings. Resource lists form a connection of 10 good actions that build on each other in sequence like a catch-all net. An

"emergency kit" can be developed, a folder or box that collects all the skills, resources, actions or reminders that have helped at some point against relapse or addictive pressure. The relapse traffic light marks the status in terms of one's vulnerability: How close am I to relapse? By which behaviors do I notice this? At yellow, the danger increases, I am in denial, fooling myself, can't say "no," abandon my principles. At red I look for the milieu, meet with the old "colleagues", am lonely, don't care about myself, have a desire for destruction. This is what Melanie's relapse traffic light might look like, for example. In addition, relapse prevention includes trigger analysis and trigger confrontation: What situation triggers the addictive pressure? How can I avoid that situation until I can be sure I am in control no matter what? In trauma therapy, triggers are processed and "erased" e.g. with EMDR, i.e. stressful memories and affects linked to this situation can be forgotten. The addiction protocol represents an attempt to actually turn off addiction-triggering stimuli by means of EMDR. Success often also depends on the complexity of the trauma experience and the attachment disorder. Many years of fear and powerlessness cannot simply be erased. The most important thing here is to practice safety as a top priority: being stronger than the perpetrator means overcoming the perpetrator-victim dynamic through understanding and acceptance. Shame and guilt are the most radical triggers of relapse, Melanie knew this too. She ultimately escaped herself and her tormentors through a new narrative, through a reinterpretation of her previous inferior junky life: she developed the narrative of a survivor who, despite all the violence that had been done to her, had somehow survived and fought to the end. She learned to speak a new language and to be proud of herself. She had survived it all. And she would never be a victim. Nor would she be a perpetrator. Nor would she have to numb herself to be able to tolerate herself anymore. Inpatient addiction treatment was over. She was leaving.

## 9. Conclusion

In the end, three major conclusions emerge, which can be summarized as follows: First, it becomes clear that the relationship between addiction, trauma, and attachment (reward system, attachment system, and anxiety/stress system) should definitely be taken into account therapeutically in order to be able to expand the spectrum of therapeutic intervention possibilities and to make the therapy of severe addiction disorders in adolescence more successful. Second, it is obviously helpful for therapy to compare two levels of description in order to develop a better understanding of the individual course of adolescent dependence disorder. At the first level, neurobiological research findings as the interrelationship of the three implicit memory systems of reward, attachment, and anxiety/stress are used as a matrix for psychoeducation; at the second level, the individual life history of the addicted adolescent becomes readable as a survival story of traumatic attachment disorders, and thus potentially correctable in its deep structure, based on this

matrix. The narratives of behavioral change thus find their limitation, but also their opportunity, at the level of neurobiological presupposition. Thus, as a third conclusion, it appears that understanding the neurobiological function of the implicit memory systems of reward, attachment, and anxiety/stress is of central importance to the advancement of addiction treatment for dependent adolescents. There is still much work to be done here; we are just beginning to understand these connections.

## References

- [1] Atkinson L, Zucker KJ (eds.) (1997): Attachment and Psychopathology. NY, London: Guilford Press.
- [2] Brisch, K.-H. (2015): "Attachment and addiction", Klett-Cotta, Stuttgart.
- [3] Buchheim A, Brisch KH (1998): Introduction to attachment theory. Psychotherapy, Psychosomatics, Medical Psychology 48. 128-138.
- [4] Bowlby J (1995): Attachment: Historical roots, theoretical concepts, and clinical relevance. In: Sprangler G, Zimmermann P (eds.): The attachment theory. Stuttgart: Klett-Cotta.
- [5] Duncan RD, Saunders BE, Kilpatrick DG (1996) Childhood physical assault a risk factor for PTSD, depression and substance abuse. Am J Orthopsychiatry 66, 437-448.
- [6] Dohrenwend BP (1998): Adversity, stress and psychopathology. Oxford: Oxford University Press.
- [7] Fischer, F. M. / Möller, C. (2018): "Sucht, Trauma und Bindung bei Kindern und Jugendlichen", Kohlhammer, Stuttgart.
- [8] Fischer, F. M. (2017): "Systemic therapy with dependent adolescents"; PID (Psychiatrie im Dialog), issue 03/2017.
- [9] Fischer, F. M. (2005): "Von Kunst und Heilung", Aachen, Shaker Verlag.
- [10] Fischer F. M. (2004): Art therapy in oncology. 112-135. In: Henn W, Gruber H (eds.): Art therapy in oncology. Claus Richter Publishers.
- [11] Fischer G, Riedesser P (2003): Textbook of psychotraumatology. Munich, Basel: Reinhardt.
- [12] Fergusson DM, Lynskey MT (1996, 1997): Physical punishment/maltreatment during childhood and adjustment in young adulthood. Child Abuse Negl. 21. 617-630.
- [13] Filetti VJ (2002): The relationship of adverse childhood experience to adult health. Z Psychosom Med Psychother 48 (4). 359-369.
- [14] Grossmann KE, Grossmann K, Winter M, Zimmermann P (2002): Attachment relationships and appraisal of partnership. In: Pulkkinen L, Caspi A (eds.) Personality in the life of course: paths to successful development. 73-105. Cambridge: Cambridge University Press.
- [15] Hare, M (2006): "CravEx, EMDR in the treatment of substance-related dependence", in: Lamprecht F. (Ed.) Praxisbuch EMDR. Stuttgart: Klett-Cotta 172-94.

- [16] Huber M (1995): Multiple personalities. Survivors of extreme violence. A handbook. Frankfurt a. M.: Fischer.
- [17] Kaplan S, Klinetob NA (2000) Childhood emotional trauma and chronic posttraumatic stress disorder. *J Nerv Ment Dis* 188. 596-601.
- [18] Kessler RC, Crum RM, Warner LA (1997) Lifetime co-occurrence of DSM III-R alcohol abuse and dependence with other psychiatric disorders. *Arch Gen Psychiatry* 54. 313-321.
- [19] Reddemann, L. (2003): *Imagination as a healing power*, Pfeiffer, Stuttgart.
- [20] Schäfer, I./ Krausz, M. (2006): "Addiction and trauma", Klett-Cotta, Stuttgart.
- [21] Schmidt SA (2000): Prevalence of child sexual abuse among opiate addicts. Berlin: VWB, Verl. für Wiss. und Bildung.
- [22] Simeon D, Guralnik O, Schmeidler J (2001) The role of childhood interpersonal trauma in depersonalization disorder. *Am J Psychiatry* 158. 1027-1033.
- [23] Simpson TL, Miller WR (2002): Concomitance between childhood sexual and physical abuse and substance use problems. *Clin Psychology Review* 22. 27-77.
- [24] Zenses E, Möble T, Fischer F, Möller C.; "Computer game dependent patients of an inpatient addiction treatment program. A descriptive multi-axial description according to DSM-IV-TR". *Pediat. Prax.*, 2014; 82, 151-160.
- [25] Najavits, ML. (2002), "Seeking Safety. A Treatment Manual for PTSD and Substance Abuse", Guilford Publications, NY.
- [26] Peichl J (2007): "Inner children, perpetrators, helpers and co.", Stuttgart: Klett-Cotta.
- [27] Watkins JG & Watkins H (2003) "Ego-state theory and therapy." Heidelberg, Carl-Auer Publishers.
- [28] Van der Kolk, B (2016): "The body keeps the score - embodied horror", Lichtenau, Probst Verlag.
- [29] Khantzian EJ (1985) "The self-medication hypothesis of addictive disorder," *Am J Psychiatry* 142 (11), 1259-64.
- [30] Bowlby J (1982): *Attachment and Loss, Vol. 1: Attachment*. NY: Basic Books.
- [31] Nijenhuis E., van der Hart, O. (2003): "The structural dissociation of personality", In: Reddemann L., Gast U.: "Psychotherapie der dissoziativen Störungen", Stuttgart, Schattauer.
- [32] Shapiro, F. (2001): "Eye Movement Desensitization and Reprocessing: Basic Principles, Protocols and Procedures", NY, Guilford Press.
- [33] Winnicott DW (1979/1987): *From play to creativity*. Stuttgart: Klett-Cotta.
- [34] Wöller W, Gast U, Reddemann L (2004): Acute and complex trauma sequelae disorders. In: Flatten G, Gast U, Hofmann A (eds.): *Posttraumatic stress disorder*. Stuttgart: Schattauer.