EMDR Level 1
Training and Supervision
Botswana
2019
Introduction

Botswana’s first EMDR training, level 1, will be held in Gaborone in February and March 2019. This brochure provides practical and in-depth information on the training and the EMDR methodology. The training is organised by Stepping Stones International.

EMDR in short

EMDR is an abbreviation of Eye Movement Desensitization and Reprocessing. It is a psychotherapy that enables people to heal from the symptoms and emotional distress that are the result of psychological trauma (Post Traumatic Stress Disorder, PTSD), such as an accident, a robbery or (sexual) violence. It is meant for survivors of trauma that experience memories that continue to occur, including flashbacks or nightmares. EMDR is a short-term protocol-based therapy form. When it comes to a trauma after a one-off event, people are often able to resume their daily activities after just a few sessions. The treatment takes longer for people who have experienced long-term trauma and for more complex problems. After successful treatment with EMDR therapy, affective distress is relieved, negative beliefs are reformulated, and physiological arousal is reduced.

How effective is it?

More than 30 positive controlled outcome studies have been done on EMDR therapy. Some of the studies show that 84%-90% of single-trauma victims no longer have post-traumatic stress disorder after only three 90-minute sessions. It is now recognized as an effective form of treatment for trauma and other disturbing experiences by organizations such as the American Psychiatric Association, the World Health Organization and the Department of Defense (US). Over 100,000 clinicians throughout the world use the therapy and millions of people have been treated successfully over the past 25 years.

EMDR in Botswana context

There are no data available of the amount of people in Botswana that suffer from PTSD. However, looking at the challenges that Batswana face in everyday life, the number is presumably very high:

- 67% of women in Botswana have experienced some form of gender-based violence
- High amount of child (sexual) abuse, exploitation and neglect (no data available)
- The high incidence of people living with HIV/AIDS (18.5% of the general population), the second highest rate in the world, affecting not only infected people directly, but also their families
- High incidence of fatal road traffic incidents (#12 cause of deaths)

In a country like Botswana with limited resources and a limited number of psychologists, psychotherapists and psychiatrists, EMDR can be a very (cost-) effective and efficient treatment with high impact.
Program
The EMDR training level 1 will take place in Gaborone. It consists of different elements:

1. **A 3-day training on 20 - 22 February 2019**
   During these days, the theory of EMDR will be explained, skills are demonstrated live and by video fragments and practiced. After this first part of the training participants are able to treat uncomplicated trauma. Participants are asked to practice EMDR and record a session within their own client population.

2. **A 2-day training on 14 -15 March 2019**
   During the second part of the training practical experience will be shared, questions will be answered and participants recordings will be discussed in a non-judging, instructional way.

3. **Supervision sessions**
   To become a good EMDR practitioner, supervision sessions are required. They will be held online (Skype) and face-to-face. The sessions will take place over the course of 2019 and 2020. The exact timing and form will be communicated timely. Efforts will be made to find (Dutch) supervisors that work in a similar work field, such as in treatment of children, addiction etc.

Entry Requirements
There are certain requirements for participants to attend the training to ensure the quality standards and effectiveness of the training. These requirements are:

1. a master degree in psychology, social work or psychiatry
2. solid experience with counselling
3. regular treatment of clients.

Costs of the Training
The costs for the entire training are **P2000** in total. This includes the trainer’s expenses, catering during the training, venue and supervision later on. The Dutch Humanitarian Assistance Program (HAP) from the Netherlands is requested to partly fund the training to cover the costs of the trainers’ expenses. The P2000 is the total amount where we already take into account HAP’s contribution.

Disclaimer
The training will only commence with a minimum of 10 (paying) participants. Another prerequisite is that the Dutch HAP will financially contribute to the training. If the training cannot take place, this will be communicated as soon as possible. Participants that have paid for the training will receive their money back.
Accreditation and CPD points
We are currently trying to have the training accredited so that participants receive CPD points (Continuing Professional Development) for attending the training. We will update people that have signed up for the training, once we know more. After successful completion of the training and supervision, trainees will receive an EMDR level 1 certificate at the end of 2019. Requirements are:

- Meeting the entry requirements
- 90% attendance of the trainings and supervision sessions
- Active participation during the training and supervision sessions
- Showcasing a recorded EMDR treatment with a client for supervision purposes
- Showcase sufficient control and mastery of EMDR’s standard protocol.

Procedures
There are only 20 spaces available, so please sign up and pay as soon as possible. To sign up for the training, we would like to receive your CV and a brief motivation. This can be sent to Mrs Jeldau Rieff, jeldau.rieff@ssint.org, +267 77867310. The deadline for signing up and submission of documents is 15 December 2018. Payment details will be provided after submission of CV and motivation. A space will only be secured after payment has been received.

Trainers
Hellen Hornsveld, PhD, is a clinical psychologist, researcher and ex-university lecturer (Utrecht University) from the Netherlands. She is an EMDR Europe Consultant and Trainer. Hellen has specialised in the working mechanisms of EMDR, personality disorders, eating disorders, and addiction. She has written and contributed to many articles and books on these topics. Hellen frequently presents at international conferences and serves on a number of editorial boards. She was one of the founders of the Dutch EMDR Association and served as a board member until 2015. Hellen is now a self-employed trainer, therapist, and researcher. She consults on and teaches EMDR in the Netherlands and abroad. More details and a list of publications can be found at www.researchgate.net/profile/Hellen_Hornsveld/publications and www.hornsveldpsychologenpraktijk.com

Alex Hooijschuur is a psychologist and EMDR supervisor from the Netherlands. He is applying EMDR since 2007. In cooperation with two Dutch EMDR trainers, local psychologists and psychological counsellors he organised a level 1 EMDR training in Uganda in April 2018. The coming months he will provide supervision to the trainees of the training in Botswana and will facilitate their development in EMDR.
More in-depth information on EMDR

We have collected three articles for you on EMDR to provide you with more in-depth knowledge on EMDR. You can also find a lot of information on EMDR on the internet, such as:

- [https://emdr-europe.org](https://emdr-europe.org)
- [https://www.emdria.org/](https://www.emdria.org/)
- [www.emdrnetwork.org](http://www.emdrnetwork.org)
- Please click the following link for a short 7-minute on EMDR (Hellen Hornsveld, one of the trainers, is in the video): [https://www.youtube.com/watch?v=nt80bvWTgVM](https://www.youtube.com/watch?v=nt80bvWTgVM)

EMDR and its application


Eye Movement Desensitisation and Reprocessing (EMDR) is a powerful trauma-focused therapy that is recommended by NICE, APA and many other international guidelines for the treatment of PTSD. The World Health Organisation (WHO, 2013) has endorsed EMDR for the treatment of PTSD in both adults and children, on basis of scientific evidence proving its efficacy. The results from a recent meta-analysis show that the application of trauma focused therapies (TFTs) for PTSD outperform that of non-TFTs or medication (Lee et al., 2016). Its effectiveness is demonstrated in PTSD arising from experiences as diverse as war related experiences, childhood sexual and/or physical abuse or neglect, natural disaster, assault, surgical trauma, road traffic accidents and workplace accidents. Since its original development, EMDR is also increasingly used to help individuals with other issues including phobias, anxiety, pain management, phantom limb pain and depression.

When a person is involved in a distressing event, they may feel overwhelmed and, therefore, their brain may be unable to process the information like a normal memory. The distressing memory seems to become frozen on a neurological level. A distressing memory may come to mind when something reminds of the distressing event, or just pop into mind without warning. The person tries to avoid thinking about the distressing event and to experience the distressing feelings.

EMDR (and other trauma focused therapies) help memories to lose their intensity, so they become less distressing and seem more like ‘ordinary’ memories. A core feature of EMDR therapy is that the patient is asked to hold a disturbing memory in mind while engaging in sets of eye movements or other bilateral stimuli, such as taps or tones (Lee & Cuijpers, 2013; Shapiro, 2001). In the original description of EMDR it was assumed that the bilaterality of the presented stimulus was a necessary factor to stimulate trauma recovery and that the effect is similar to that which occurs naturally during REM sleep (Rapid Eye Movement) when your eyes rapidly move from side to side.
However, evidence is mounting to support an explanation based upon a working memory model. Since a traumatic memory is inherently intense, vivid and emotionally charged, it taxes working memory resources when it is recalled. If at the same time another task (i.e. client’s eyes following the therapist’s hand back and forth) is executed during recall, fewer resources would be available for the memory. This competition within the working memory results in less memory resources for the vividness and the disturbance or emotionality of the memory.

A Brief Description of the 8 phases of EMDR Therapy

Examples of sessions and a three-session transcript of a complete treatment can be found in F. Shapiro & M.S. Forrest (2004) EMDR: The Breakthrough Therapy for Anxiety, Stress and Trauma. New York: BasicBooks. Adapted from material from www.emdrnetwork.org

The amount of time the complete treatment will take depends upon the history of the client. Complete treatment of the targets involves a three-pronged protocol (1-past memories, 2-present disturbance, 3-future actions). These are needed to alleviate the symptoms and address the complete clinical picture. The goal of EMDR therapy is to process completely the experiences that are causing problems, and to include new ones that are needed for full health. "Processing" does not mean talking about it. "Processing" means setting up a learning state that will allow experiences that are causing problems to be "digested" and stored appropriately in your brain. That means that what is useful to you from an experience will be learned, and stored with appropriate emotions in your brain, and be able to guide you in positive ways in the future. The inappropriate emotions, beliefs, and body sensations will be discarded. Negative emotions, feelings and behaviours are generally caused by unresolved earlier experiences that are pushing you in the wrong directions. The goal of EMDR therapy is to leave you with the emotions, understanding, and perspectives that will lead to healthy and useful behaviours and interactions.

Phase 1: History and Treatment Planning

This phase generally takes 1-2 sessions at the beginning of therapy, and can continue throughout the therapy, especially if new problems are revealed. In the first phase of EMDR treatment, the therapist takes a thorough history of the client and develops a treatment plan. This phase will include a discussion of the specific problem that has brought him into therapy, his behaviours stemming from that problem, and his symptoms. With this information, the therapist will develop a treatment plan that defines the specific targets on which to use EMDR. These targets include the event(s) from the past that created the problem, the present situations that cause distress, and the key skills or behaviours the client needs to learn for his future well-being. One of the unusual features of EMDR is that the person seeking treatment does not have to discuss any of his disturbing memories in detail. So while some individuals are comfortable, and even prefer, giving specifics, other people may present more of a general picture or outline. When the therapist asks, for example, "What event do you remember that made you feel worthless and useless?" the person may say, "It was something my brother did to me." That is all the information the therapist needs to identify and target the event with EMDR.
Phase 2: Preparation
For most clients this will take only 1–4 sessions. For others, with a very traumatized background, or with certain diagnoses, a longer time may be necessary. Basically, your clinician will teach you some specific techniques so you can rapidly deal with any emotional disturbance that may arise. If you can do that, you are generally able to proceed to the next phase. One of the primary goals of the preparation phase is to establish a relationship of trust between the client and the therapist. While the person does not have to go into great detail about his disturbing memories, if the EMDR client does not trust his clinician, he may not accurately report what he feels and what changes he is (or isn't) experiencing during the eye movements. If he just wants to please the clinician and says he feels better when he doesn't, no therapy in the world will resolve his trauma. In any form of therapy it is best to look at the clinician as a facilitator, or guide, who needs to hear of any hurt, need, or disappointments in order to help achieve the common goal. EMDR is a great deal more than just eye movements, and the clinician needs to know when to employ any of the needed procedures to keep the processing going. During the Preparation Phase, the clinician will explain the theory of EMDR, how it is done, and what the person can expect during and after treatment. Finally, the clinician will teach the client a variety of relaxation techniques for calming himself in the face of any emotional disturbance that may arise during or after a session. Learning these tools is an important aid for anyone. The happiest people on the planet have ways of relaxing themselves and decompressing from life's inevitable, and often unsuspected, stress. One goal of EMDR therapy is to make sure that the client can take care of himself.

Phase 3: Assessment
This is used to access each target in a controlled and standardized way so it can be effectively processed. Processing does not mean talking about it. See the Reprocessing sections below. The clinician identifies the aspects of the target to be processed. The first step is for the person to select a specific picture or scene from the target event (which was identified during Phase One) that best represents the memory. Then he chooses a statement that expresses a negative self-belief associated with the event. Even if he intellectually knows that the statement is false, it is important that he focus on it. These negative beliefs are actually verbalizations of the disturbing emotions that still exist. Common negative cognitions include statements such as "I am helpless," "I am worthless," "I am unlovable," "I am dirty," "I am bad," etc. The client then picks a positive self-statement that he would rather believe. This statement should incorporate an internal sense of control such as "I am worthwhile/lovable/a good person/in control" or "I can succeed." Sometimes, when the primary emotion is fear, such as in the aftermath of a natural disaster, the negative cognition can be, "I am in danger" and the positive cognition can be, "I am safe now." "I am in danger" can be considered a negative cognition, because the fear is inappropriate—it is locked in the nervous system, but the danger is actually past. The positive cognition should reflect what is actually appropriate in the present. At this point, the therapist will ask the person to estimate how true he feels his positive belief is using the 1-to-7 Validity of Cognition (VOC) scale. "1" equals "completely false," and "7" equals "completely true." It is important to give a score that reflects how the person "feels," not "thinks." We may logically "know" that something is wrong, but we are most driven by how it "feels." Also, during the Assessment Phase, the person identifies the negative emotions (fear, anger) and physical sensations (tightness in the stomach, cold hands) he associates with the target. The client also rates the disturbance using the 0 (no disturbance)—to-10 (the worst feeling you've ever had) Subjective Units of Disturbance (SUD) scale.
Reprocessing
For a single trauma reprocessing is generally accomplished within 3 sessions. If it takes longer, you should see some improvement within that amount of time.

Phases One through Three lay the groundwork for the comprehensive treatment and reprocessing of the specific targeted events. Although the eye movements (or taps, or tones) are used during the following three phases, they are only one component of a complex therapy. The use of the step-by-step eight-phase approach allows the experienced, trained EMDR clinician to maximize the treatment effects for the client in a logical and standardized fashion. It also allows both the client and the clinician to monitor the progress during every treatment session.

Phase 4: Desensitization
This phase focuses on the client’s disturbing emotions and sensations as they are measured by the SUDs rating. This phase deals with all of the person's responses (including other memories, insights and associations that may arise) as the targeted event changes and its disturbing elements are resolved. This phase gives the opportunity to identify and resolve similar events that may have occurred and are associated with the target. That way, a client can actually surpass her initial goals and heal beyond her expectations. During desensitization, the therapist leads the person in sets of eye movement (or other forms of stimulation) with appropriate shifts and changes of focus until his SUDscale levels are reduced to zero (or 1 or 2 if this is more appropriate). Starting with the main target, the different associations to the memory are followed. For instance, a person may start with a horrific event and soon have other associations to it. The clinician will guide the client to a complete resolution of the target.

Phase 5: Installation
The goal is to concentrate on and increase the strength of the positive belief that the person has identified to replace his original negative belief. For example, the client might begin with a mental image of being beaten up by his father and a negative belief of "I am powerless."

During the Desensitization Phase he will have reprocessed the terror of that childhood event and fully realized that as an adult he now has strength and choices he didn't have when he was young. During this fifth phase of treatment, his positive cognition, "I am now in control," will be strengthened and installed. How deeply the person believes his positive cognition is then measured using the Validity of Cognition (VOC) scale. The goal is for the person to accept the full truth of his positive self--statement at a level of 7 (completely true). Fortunately, just as EMDR cannot make anyone shed appropriate negative feelings, it cannot make the person believe anything positive that is not appropriate either. So if the person is aware that he actually needs to learn some new skill, such as self--defence training, in order to be truly in control of the situation, the validity of his positive belief will rise only to the corresponding level, such as a 5 or 6 on the VOC scale.

Phase 6: Body scan
After the positive cognition has been strengthened and installed, the therapist will ask the person to bring the original target event to mind and see if he notices any residual tension in his body. If so, these physical sensations are then targeted for reprocessing. Evaluations of thousands of EMDR sessions indicate that there is a physical response to unresolved thoughts.
This finding has been supported by independent studies of memory indicating that when a person is negatively affected by trauma, information about the traumatic event is stored in motoric (or body systems) memory, rather than narrative memory, and retains the negative emotions and physical sensations of the original event. When that information is processed, however, it can then move to narrative (or verbalizable) memory and the body sensations and negative feelings associated with it disappear. Therefore, an EMDR session is not considered successful until the client can bring up the original target without feeling any body tension. Positive self-beliefs are important, but they have to be believed on more than just an intellectual level.

**Phase 7: Closure**
The Closure ensures that the person leaves at the end of each session feeling better than at the beginning. If the processing of the traumatic target event is not complete in a single session, the therapist will assist the person in using a variety of self-calming techniques in order to regain a sense of equilibrium. Throughout the EMDR session, the client has been in control (for instance, he is instructed that it is okay to raise his hand in the “stop” gesture at any time) and it is important that the client continue to feel in control outside the therapist's office. He is also briefed on what to expect between sessions (some processing may continue, some new material may arise), how to use a journal to record these experiences, and which techniques he might use on his own to help him feel calmer.

**Phase 8: Re-evaluation**
Opens every new session at the beginning of subsequent sessions, the therapist checks to make sure that the positive results (low SUDs, high VOC, nobody tension) have been maintained, identifies any new areas that need treatment, and continues reprocessing the additional targets. The Re-evaluation Phase guides the clinician through the treatment plans that are needed in order to deal with the client's problems. As with any form of good therapy, the Re-evaluation Phase is vital in order to determine the success of the treatment over time. Although clients may feel relief almost immediately with EMDR, it is as important to complete the eight phases of treatment, as it is to complete an entire course of treatment with antibiotics.

**PAST, PRESENT, AND FUTURE**
Although EMDR may produce results more rapidly than previous forms of therapy, speed is not the issue and it is important to remember that every client has different needs. For instance, one client may take weeks to establish sufficient feelings of trust (Phase Two), while another may proceed quickly through the first six phases of treatment only to reveal, then, something even more important that needs treatment. Also, treatment is not complete until EMDR therapy has focused on the past memories that are contributing to the problem, the present situations that are disturbing, and what skills the client may need for the future.
The AIP Model of EMDR Therapy and Pathogenic Memories

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Eye Movement Desensitization and Reprocessing (EMDR) therapy has been widely recognized as an efficacious treatment for post-traumatic stress disorder (PTSD). In the last years more insight has been gained regarding the efficacy of EMDR therapy in a broad field of mental disorders beyond PTSD. The cornerstone of EMDR therapy is its unique model of pathogenesis and change: the adaptive information processing (AIP) model. The AIP model developed by F. Shapiro has found support and differentiation in recent studies on the importance of memories in the pathogenesis of a range of mental disorders beside PTSD. However, theoretical publications or research on the application of the AIP model are still rare. The increasing acceptance of ideas that relate the origin of many mental disorders to the formation and consolidation of implicit dysfunctional memory lead to formation of the theory of pathogenic memories. Within the theory of pathogenic memories these implicit dysfunctional memories are considered to form basis of a variety of mental disorders. The theory of pathogenic memories seems compatible to the AIP model of EMDR therapy, which offers strategies to effectively access and transmute these memories leading to amelioration or resolution of symptoms. Merging the AIP model with the theory of pathogenic memories may initiate research. In consequence, patients suffering from such memory-based disorders may be earlier diagnosed and treated more effectively.

Keywords: EMDR therapy, mental disorders, pathogenic memory, psychotherapy, PTSD, psychosomatic medicine

INTRODUCTION

Eye Movement Desensitization and Reprocessing (EMDR) therapy was introduced in 1987 as a treatment for post-traumatic stress disorder (PTSD). EMDR therapy is not only an evidence-based treatment of PTSD (Bisson and Andrew, 2007; Watts et al., 2013; World Health Organization [WHO], 2013; Schulz et al., 2015), but is also a potentially effective treatment for various other mental disorders as affective disorders (Landin-Romero et al., 2013; Hofmann et al., 2014; Novo et al., 2014; Hase et al., 2015), chronic pain (Schneider et al., 2005; Wilensky, 2006; de Roos et al., 2010; Gerhardt et al., 2016), addiction (Hase et al., 2008; Abel and O’Brien, 2010), or obsessive compulsive disorders (Marsden et al., 2017). Functional imaging studies enable us to understand the working mechanisms of EMDR therapy to a great extent (Pagani et al., 2012; Lee and Cuijpers, 2013).
F. Shapiro developed a model of pathogenesis and change based on her experiences in EMDR therapy treatment sessions. This model is unique to EMDR therapy and is called adaptive information processing (AIP) model, abbreviated AIP model (Shapiro, 2001a). Since then, the development and practice of EMDR therapy has been guided by the AIP model.

One of the key tenets of the AIP model predicts that dysfunctionally stored and not fully processed memories are the cause of a number of mental disorders, including, e.g., PTSD, affective disorders, chronic pain, addiction, and various other disorders. However, the exact nature of memory and its mechanism in detail is far more difficult to determine than the fact that after a certain event, a certain psychopathology appears, which can be effectively addressed by EMDR therapy.

THE AIP MODEL OF EMDR THERAPY

From her experiences in EMDR treatment sessions, Shapiro developed a unique theoretical model for the pathogenesis and change relating to EMDR therapy (Shapiro, 2001a,b). Since then, EMDR therapy has been guided by the AIP model (Shapiro, 2007; Shapiro and Lalliots, 2011). The AIP model focuses on the patient's resources. Within the AIP model, one assumes that the human brain can usually process stressful information to complete integration. Only if this innate information processing system is impaired, the memory will be stored in a raw, unprocessed, and maladaptive form. A particularly distressing incident may then become stored in state-specific form. This implies also the inability to connect with other memory networks that hold adaptive information. Shapiro hypothesizes that when a memory is encoded in such excitatory, state-specific form, the original perceptions can be triggered by a variety of internal and external stimuli. In the view of the AIP model dysfunctionally stored memories form the basis for future maladaptive responses, because perceptions of current situations are automatically linked with associated memory networks of these unprocessed, dysfunctionally stored memories. For instance childhood experiences also may be encoded with survival mechanisms and include feelings of danger that are inappropriate for adults. However, these past events retain their power because they have not been appropriately assimilated over time into adaptive networks (Solomon and Shapiro, 2008). One of the key tenets of the AIP model is that these dysfunctionally stored and not fully processed memories form the basis of psychopathology. Activation of these memories, even years after the event, can lead to a spectrum of symptoms including intrusions that can range from an overwhelming experience, mostly called flashback, to barely noticeable intrusions. These memories lack the feeling of remembering, as described by Barry as memories without “memory awareness” (Barry et al., 2006). This contributes to the lively, actual experience, and sometimes makes it difficult to connect symptoms to the memories behind them.

The overwhelming experience and high amount of traumatic stress in a traumatic experience according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) (American Psychiatric Association [APA], 2013) can be assumed to explain the disruption in information processing. But there can be many more causes imaginable as clinical experiences show (Hase and Balmaceda, 2015). Intense feelings of helplessness beside traumatic events or misinterpretations of an event as being extremely dangerous could also have these consequences. Other intense emotions based in previous experiences could lead to disruption in information processing. With children and adolescents the attachment to a caregiver or a sense of meaning seems to be a prerequisite for the processing of a stressful life experience. Accordingly the absence of an attachment figure could lead to impairment in information processing and thus to the development of PTSD even in the absence of a criterion A event (Verlinden et al., 2013). Of course abusive behavior of an attachment figure or neglect would likely lead to such consequences. Exhaustion and physical conditions in somatic disorders could explain the disruption in information processing as well as the influence of drugs in drug rape or during medical procedures. Of course this short list of possible causes is not comprehensive. It needs more rigorous research to determine the prerequisites beyond type A trauma.

In accordance with the AIP model these dysfunctionally stored memories become the focus of EMDR protocols and procedures in order to activate the information processing system thus transmuting these memories by so-called “reprocessing.” The subsequent integration into adaptive memory networks leads to a resolution of symptoms and enables learning (Solomon and Shapiro, 2008).

PATHOGENIC MEMORIES

Although the scientific discourse tends to associate memories that create intrusions with criterion A events and the definition of PTSD, non-criterion A events have been shown to create even more intrusions than criterion A events (Gold et al., 2005). Additionally, data from a survey of 832 adult subjects indicated that stressful life events can generate at least as many PTSD symptoms as traumatic events (Kendler et al., 2003). McFarlane (2010) showed that stressful life experiences can lead to intrusions without a fully developed PTSD. McFarlane (2010) also demonstrated that these intrusions relate to many mental disorders and poor health in general. Following these findings intrusions seem to be a common memory-based symptom, which is not necessarily linked with a PTSD diagnosis or criterion A event. Nevertheless, intrusions indicate a memory-based pathology beyond PTSD that can be linked with other mental disorders. This is consistent with a publication of Heinz et al. (2016) discussing basic learning mechanisms as representations of a basic dimension of mental disorders. They advocate for a research focus on such basic dimensions rather than pursuing a narrow focus on single disorders.

Centonze et al. (2005) described the importance of pathogenic memories from a theoretical perspective. There approach is based on the increasing acceptance of theories that relate the origin of many psychiatric symptoms to the formation and consolidation of implicit dysfunctional memory (Centonze
et al., 2005). Since their publication other prominent authors have engaged in this discussion. Alberini and LeDoux (2013) summarize research on memory reconsolidation and dwell on the therapeutic perspective. In their opinion further research on memory reconsolidation could help to ameliorate maladaptive memories and potentiate adaptive behaviors in psychopathology (Alberini and LeDoux, 2013). Sillivan et al. (2015) explore the possibilities of latest research on epigenetic modification. They advocate for a recognition of the contribution of epigenetic mechanisms to how pathological memories associated with addiction and PTSD are stored, expressed, and subsequently modified, possibly leading to novel therapeutic targets (Sillivan et al., 2015).

Summarizing current neurobiological research, Centonze et al. (2005) state: “Experimental research examining the neural bases of non-declarative memory (such as habit formation, classical conditioning, and fear conditioning) has offered intriguing insight into how functional and dysfunctional implicit learning affects the brain.” They give evidence on the importance of long-term modification of synaptic transmission in particular as the most plausible mechanisms underlying memory trace encoding compulsions, addiction, anxiety, and phobias. Compulsions and other stereotypies are viewed as pathological habits (nearly automated implicit motor abilities) encoded as aberrant synaptic plasticity in the corticobasal ganglia loop. Centonze et al. (2005) refer to addictive drugs abusing the molecular mechanisms of reward-based associative learning by inducing long-term changes in synaptic effectiveness in those brain areas serving basic biological needs, such as feeding and sexual interaction. Finally, anxiety, panic disorder, and phobias are viewed as uncontrolled and repetitive defensive reactions secondary to abnormal fear conditioning – a form of implicit associative learning, encoded as long-term potentiation (LTP) in the lateral amygdala. In consequence, Centonze et al. (2005) propose that an effective psychotherapy must be directed to erase maladaptive pathogenic memories and research should focus on the development of techniques to remove pathogenic memories. Although they mentioned neither the AIP model, nor EMDR therapy, the concept of pathogenic memories could probably open another view on recent developments in EMDR research.

It seems to be of interest to explore the overlap of the theory of pathogenic memory and the AIP model, regarding practical implications for EMDR therapy in reprocessing maladaptive implicit memories, especially as the cited authors are advocating for the developments of therapeutic tools to modify pathogenic memories. As Centonze et al. (2005) coined the term “pathogenic memory” but did not give a precise definition, one should start here.

DEFINITION AND PERSPECTIVE

A clinical core feature of a pathogenic memories would be experiencing intrusions while the memory is activated, e.g., by sensory cues. A second feature of such memories may include vegetative arousal or other biological activity. Vegetative arousal may be felt by the patient when the memory is activated. EMDR therapists use this arousal to measure the “subjective level of disturbance” (also called SUD D subjective units of disturbance) in EMDR therapy. Craving and pain can be also understood as intrusions and assessed in similar ways (subjective level of urge, subjective level of pain). Studies show that if the memory is reprocessed in EMDR therapy, the vegetative arousal linked to the memory subsides and the SUD scores indicate change or, e.g., pain is reduced.

In addition the definition of trauma could lose some significance. The future question would not be about how traumatic an event is, but rather on the pathology developing after the event. This could lead to better understanding of the processing of certain “non-traumatic,” but nevertheless pathogenic memories within EMDR therapy. Considering the experiences of EMDR clinicians worldwide, the number of patients suffering from pathogenic memories may be much greater than that of patients suffering from PTSD alone.

Patients who may benefit from this conceptual expansion of memory pathology and subsequent reprocessing with EMDR could be suffering from a variety of mental disorders as laid out in the section “Introduction.” We will now focus on addiction, pain, and affective disorders as there seems to be more background by research or evidence by controlled studies.

(A) Patients with addiction disorders. A specific “addiction memory” was already postulated by Wolfgaigramm in 1995 from his studies of animal models (Wolfgaigramm and Heyne, 1995; Heyne et al., 1999). Wolfgaigramm and Heyne (1995) postulated that addiction memory contributes to craving and the chronic course of addiction. Interestingly, the removal of the addiction memory by altering the brain’s ability to learn led to a complete remission of the disorder, at least in Wolfgaigramm’s animal model (Wolfgaigramm, 2004). Patients will most likely experience intrusions of an activated addiction memory as craving for the specific drug of abuse. In clinical studies, the reprocessing of these pathogenic craving memories within EMDR therapy improved the clinical course of patients with addiction memories (Hase et al., 2008; Abel and O’Brien, 2010).

(B) Patients with pain disorders. Phantom limb pain can be understood as the somatosensory intrusion of a pathogenic “pain memory.” One can assume that this memory is mainly based on the painful experiences before the limb was lost. Recent research showed that the prevalence of phantom limb pain after amputation of a limb or parts of it can be minimized by blocking nervous transmission for a prolonged period of time post-amputation, probably preventing the formation of pain memory (Borghi et al., 2010, 2014).

Reprocessing of pain memory should lead to symptom reduction. In three case series with a total of 30 phantom limb pain patients which were treated with EMDR therapy, 50% lost their pain completely (Schneider et al., 2005; Wilensky, 2006; de Roos et al., 2010). Additionally, Gerhardt et al. (2016) reported in a pilot study that patients with stressful memories and chronic back pain benefitted significantly from EMDR therapy, with 50% of patients losing their back pain completely.

(C) Patients with affective disorders. The importance of implicit memory in the pathogenesis of depression was already described by Barry et al. (2006). Recent studies link certain
types of depression to stressful life events (Kendler et al., 2003). Until now, this was mainly considered a risk factor or a contributing factor for depression, but the concept of pathogenic memories offers another point of view. Since treatment options for recurrent depressive disorder patients and those with chronic depression are limited, further research investigating the role of depressive episode-triggering memories as well as EMDR therapy for the treatment of depressive disorders shows promise to improve the treatment of depression (Hofmann et al., 2014; Hase et al., 2015) and bipolar affective disorder (Landin-Romero et al., 2013; Novo et al., 2014).

Summarizing on the AIP Model and Pathogenic Memories
The concept of pathogenic memories as the basis of mental and psychosomatic disorders can be easily integrated in the AIP model. The term “pathogenic memory” describes accurately the dysfunctionally stored memory as described by Shapiro in the AIP model. This opens up a new understanding of pathogenesis and therapeutic change in mental disorders far beyond PTSD. PTSD may be the prototypical disorder based in disruption of memory processing, but not the only one. These ideas could explain the development and progress of depression, the formation of pain memory leading to phantom limb pain, the role of addiction memory in addictive disorders, the deviantional offender phantasies based on memories of abuse, the revenge phantasies of soldiers stemming from the battlefield memories and many more. On the other hand, EMDR therapy provides us not only with techniques to detect pathogenic memories but also with elaborated treatment plans (protocols), procedures, and techniques for a variety of mental disorders and has convincing evidence in the treatment of PTSD. This is a great advantage to Centonze’s appeal to remove pathogenic memories but lacking the tools to achieve this goal. Many studies on memory reprocessing in EMDR therapy with different disorders gave evidence on this AIP informed approach. It seems possible to target pathogenic memories and reprocess them, thus leading to transmutation, contributing to mental and physical equilibrium, and leading to long-lasting change.

DISCUSSION
There is a growing body of research showing that memories can contribute to pathology in many mental disorders. Research proposes to extend the range of disorders that are linked with pathogenic memories beyond PTSD and other trauma-based disorders. This is in line with the EMDR literature, where the AIP model of EMDR has predicted that PTSD is not the only memory-based disorder and has linked many other disorders to “dysfunctionally stored memories.”

One of the drawbacks of the AIP model is that it is difficult to determine what “dysfunctionally stored” means on a neurobiological level, which limits the scope of the AIP model. However, one could replace this term with the term “pathogenic” to define memories as causing symptoms without precisely needing to know their neurobiological details. In this way, more patients could benefit from a memory-related diagnosis and an adequate treatment. Meanwhile, research on memory pathology and its neurobiological underpinnings, as well as research on the clinical application of this knowledge could be supported by clear-cut research questions. This research direction also offers the possibility to move toward a diagnostic group of (mainly) “memory-based disorders” that are not exclusively focused on trauma-related events. This may lead to a broader application of well-researched EMDR protocols and procedures offering more help to patients who experience limited success undergoing psychotherapy as usual.

AUTHOR CONTRIBUTIONS
MH and AH laid the theme out and wrote the manuscript; UB contributed to the manuscript; and LO and PL assisted in the literature search.

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**Conflict of Interest Statement:** MH, PL, and AH are offering education in EMDR therapy to licensed psychotherapists.

The other authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The reviewer CC declared a shared affiliation, though no other collaboration, with one of the authors, LO, to the handling Editor.

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