

Do your eyes protect your memory?

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Impact

This impact chapter addresses the scientific and clinical implications of the results discussed in this dissertation. Besides its theoretical relevance, the research presented in this dissertation can have ramifications for society. Though many of these practical applications have been discussed in the previous chapters, several key aspects will be highlighted in this chapter. More specifically, the following aspects will be highlighted: (i) research (i.e., what is the main aim of the dissertation and its conclusions); (ii) relevance (i.e., what does the dissertation contribute to science and society); (iii) target group (i.e., for whom are the findings reported in the dissertation relevant and why); and (iv) activity (i.e., how to involve the target group so that the acquired knowledge can be used).

Research. The main aim of this dissertation was to examine the (legal) psychological effects of Eye Movement Desensitization and Reprocessing (EMDR). EMDR uses well-known psychological myths (e.g., memory works as a video camera) to identify the target image. Such instructions, however, can lead to expectancy effects, which may motivate patients to report more (false) details as they originally remembered. In addition to this, the instructions and a therapist providing such an instruction were not evaluated positively. That is, the instructions were sometimes evaluated as vague and the therapist providing the instruction as unreliable. A therapeutic relationship is important for a successful treatment outcome and these views may jeopardize this. Moreover, performing eye movements during memory retrieval is a key component of EMDR and its aim is to diminish the emotional impact of traumatic memories (Shapiro, 2002). However, alternative dual tasks obtained a similar effect. Furthermore, vividness seemed to be affected more strongly by eye movements (or alternative dual tasks) than emotionality. Hence, the role of vividness might be more prominent than initially assumed.

As EMDR therapists work with autobiographical memories it is imperative that they are aware of how memory functions. Although EMDR therapists (and students and researchers as well) have some sufficient knowledge about the functioning of memory (i.e., they are aware that (traumatic) memory is reconstructive), they hold strong beliefs in the controversial concept of repressed memories. This is highly problematic as it can lead to actively seeking repressed memories, thereby increasing the likelihood of false memory formation.

Concerning the memory effects of eye movements as used in EMDR, this dissertation focused on the susceptibility to suggestion-induced false memories and spontaneous false memories. By using well-known false memory paradigms (e.g., misinformation paradigm and DRM paradigm), the results of this dissertation suggest that after performing eye movements,

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individuals might become more susceptible to both suggestion-induced and spontaneous false memories. Hence, eye movements as used in EMDR might lead to therapeutic side effects. More specifically, when misinformation is suggested after performing eye movements, a patient might endorse this into one's own memory of the event. However, even when the therapy is adequately performed by a therapist, performing eye movements can still lead to the formation of spontaneous false memories because it increases the associative link between memories.

Relevance. The relevance of the findings reported in this dissertation lies in its implications. Individuals who encountered a traumatic experience and who are not able to cope adequately with this are at risk to develop PTSD. In such cases, EMDR will be a first choice of treatment. However, unlike medicine, potential side effects of therapeutic interventions are unknown. Such knowledge is important for all therapeutic interventions, but especially for a therapy that gained immense popularity without a solid theoretical background. The results discussed in this dissertation and reported by others (e.g., Leer et al., 2017; 2020) indicate that eye movements lead to memory impairing effects. Hence, when an individual has been treated with EMDR before filing a report to the police, the reliability of the eyewitness statements is questionable.

While research in the area of therapeutic side effects is still in its infancy, the findings from this dissertation serve as a foundation toward a more comprehension of these concerns on the short-term and to serve as an encouragement for future research to examine potential therapeutic side effects.

Target group. The results of this dissertation are targeted at both scientific and clinical professionals. The subject of psychological therapeutic side effects is highly understudied in the academic field (Rozental et al., 2016). Knowledge about possible side effects has to be established in a laboratory setting before applying research in the clinical field. Therefore, it is up to researchers to examine potential side effects of psychological interventions by means of high quality studies.

The other target group for this dissertation, clinicians, are the professions who apply scientific knowledge in the field. Based on scientific results on the functioning of memory and therapeutic side effects, they have to know (i) what possible side-effects could occur; (ii) how to prevent them; (iii) how to recognize them and (iv) how to solve them. Though the prevention and recognition of side effects might seem more important, it is only logical that therapists have to know *what* they have to look out for. This dissertation addressed the

first point and only one kind of therapeutic side effect. For clinicians to effectively apply this knowledge in practice, researchers may want to catch up on the importance of examining therapeutic side effects. Lastly, the results of this dissertation could be of interest to legal practitioners (e.g., judges, lawyers). These professions are concerned with evaluating the credibility of eyewitness testimonies. For example, objective evidence is oftentimes absent in sexual abuse cases and eyewitness testimonies are the only evidence to rely on. Legal professionals have to be aware of the potential problems EMDR entails, so they benefit from knowledge regarding therapeutic side effects, because victims of traumatic events are most likely to be treated with EMDR.

The findings reported in this dissertation require additional research and replication before robust recommendations can be offered to practitioners working in these contexts. However, this does not mean that all three practitioner groups (i.e., researchers, clinical and legal practitioners) should discard potential pitfalls of therapeutic interventions.

Activity. All target groups can be informed about the findings discussed in this dissertation in multiple ways. Researchers can be reached in the usual manner by means of scientific conferences and scientific publications. Scientific publications should be open access so that clinicians can access these as well. A way to promote research on the topic of therapeutic side effects, researchers could work with open data (e.g., the Open Science Framework). In this way, materials, procedure and data will be available and this might increase the quality of scientific studies.

Clinicians can be reached by several options. First, knowledge on therapeutic side effects (e.g., false memories) and knowledge about the functioning of memory should be implemented in their mandatory education. Moreover, trainings about these topics should be followed more than once to keep one's expertise level high. There are clinical conferences where clinicians could be informed about scientific findings as well. However, to ensure this, researchers examining this topic should also be accepted to present their findings on clinical conferences. At such conferences, they can inform clinicians directly and in a correct manner, before misinterpretations might circulate in certain therapeutic groups. Moreover, clinical practices could also invite researchers to present their findings in their own group. By doing this, there might be more room for questioning than usually is on conferences. Furthermore, magazines of certain therapeutic associations should also be accessible to researchers, because it may give them a look into how matters evolve in clinical practice.

Legal practitioners can be addressed in the same manner as the ones discussed

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above. But, more specifically, interdisciplinary conferences and journals would benefit this spreading of knowledge.

Finally, all target groups can be informed by means of teaching. This could start as early in Bachelor's and Master's programs as well as in postgraduate studies. For example, specific core courses could implement this or even a specific course could be added to the curriculum.

To diminish the scientist-practitioner gap, the expertise of all professionals must be bridged. Knowledge is achieved by cooperation between all parties involved (i.e., researchers and practitioners) and this should be facilitated, not obstructed. Only then, it might be possible to solve the problematic role of EMDR within legal cases.