J. Behav. Ther. & Exp. Psychiat. 55 (2017) 6–15

Contents lists available at ScienceDirect

Journal of Behavior Therapy and Experimental Psychiatry

journal homepage: www.elsevier.com/locate/jbtep

Imagery rescripting as a clinical intervention for aversive memories: A meta-analysis

Nexhmedin Morina [a, *], Jaap Lancee [b], Arnoud Arntz [b]

[a] Department of Psychology, University of Münster, Münster, Germany
[b] Department of Clinical Psychology, University of Amsterdam, Amsterdam, The Netherlands

ARTICLE INFO

Article history:
Received 29 July 2016
Received in revised form
6 October 2016
Accepted 2 November 2016
Available online 9 November 2016

Keywords:
Imagery rescripting
Intervention
Aversive memories
Meta-analysis

ABSTRACT

Background and objectives: Literature suggests that imagery rescripting (ImRs) is an effective psychological intervention.
Methods: We conducted a meta-analysis of ImRs for psychological complaints that are associated with aversive memories. Relevant publications were collected from the databases Medline, PsychInfo, and Web of Science.
Results: The search identified 19 trials (including seven randomized controlled trials) with 363 adult patients with posttraumatic stress disorder (eight trials), social anxiety disorder (six trials), body dysmorphic disorder (two trials), major depression (one trial), bulimia nervosa (one trial), or obsessive compulsive disorder (one trial). ImRs was administered over a mean of 4.5 sessions (range, 1–16). Effect size estimates suggest that ImRs is largely effective in reducing symptoms from pretreatment to posttreatment and follow-up in the overall sample (Hedges' $g = 1.22$ and 1.79, respectively). The comparison of ImRs to passive treatment conditions resulted in a large effect size ($g = 0.90$) at posttreatment. Finally, the effects of ImRs on comorbid depression, aversive imagery, and encapsulated beliefs were also large.
Limitations: Most of the analyses involved pre-post comparisons and the findings are limited by the small number of randomized controlled trials.
Conclusions: Our findings indicate that ImRs is a promising intervention for psychological complaints related to aversive memories, with large effects obtained in a small number of session.

Contents

* Corresponding author. University of Münster, Department of Psychology, Fliednerstr. 21 48149 Münster, Germany.
E-mail address: morina@uni-muenster.de (N. Morina).

http://dx.doi.org/10.1016/j.jbtep.2016.11.003
0005-7916/

1. Introduction

Imagery rescripting (ImRs) has been used as a therapeutic intervention either in combination with other treatments (particularly within cognitive-behavior therapy) or alone for a variety of psychological complaints that are associated with aversive memories (Edwards, 2007). This form of intervention consists of a set of therapeutic procedures applied to modify the content of preexisting unpleasant memories into more benign images or to use new positive images to rescript negative schematic beliefs (Holmes, Arntz, & Smucker, 2007). Herein, aversive memories are activated and thereupon emotional and cognitive features of the mental representation of aversive stimuli are changed and potentially reconsolidated. For example, a client with symptoms of posttraumatic stress disorder (PTSD) following sexual assault might rescript her aversive memory into an image that portrays her as successfully defending herself against the assailant. A rather puzzling finding among clients undergoing ImRs is that although clients are aware of the fact that the rescripted image is not the accurate representation of the original event, they still report that the new image better meets their current emotional needs. It has been suggested that the underlying working mechanism of ImRs might be the change in meaning of the representation of the negative valence of aversive stimuli (Arntz, 2012). Accordingly, instead of weakening the association between the conditional stimulus (CS) and unconditional stimulus (US) as often done in exposure therapy, ImRs is proposed to devalue or reevaluate US memories directly and thus reduce CS-elicited affect. This notion is in line with accumulating findings that memories can be changed after storage during a process labeled as reconsolidation (Schwabe, Nader, & Pruessner, 2014). Although there is some preliminary evidence to support this notion of the change in meaning of the representation of the negative valence of aversive stimuli (Dibbets, Poort, & Arntz, 2012; Hagenaars & Arntz, 2012), a thorough investigation of the working mechanisms of ImRs remains open.

Several trials have reported that ImRs can effectively reduce symptoms associated with aversive memories. Arntz (2012) published a narrative review of intervention studies applying ImRs either as part of an another treatment package (12 trials) or as a stand-alone intervention (seven trials). Arntz concluded that the existing publications provide promising results regarding the efficacy of ImRs. Several clinical trials on ImRs have been published following the systematic and narrative review completed by Arntz in 2011. Therefore, we aimed at conducting an updated systematic review and meta-analysis of clinical trials on ImRs to assess its efficacy in reducing levels of psychopathology related to aversive memories.

2. Method

2.1. Identification and selection of studies

The aims and methods of this meta-analysis were registered with the PROSPERO database (CRD42016032451, http://www.crd.york.ac.uk/prospero). We defined the main structured research question describing the Population, Intervention, Comparison, Outcome, and Study design (PICOS) in accordance with the recommendations by the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) group (Moher, Liberati, Tetzlaff, Altman, & PRISMA Grp, 2009). The question was "In patients with psychological symptoms associated with aversive memories (P), does imagery rescripting (I), in within-group and between-group comparisons (C), improve symptoms (O) in clinical trials (S)?" The criteria for including trials into the current meta-analysis were: 1) ImRs consisted of at least 50% of the applied treatment, 2) treatment targeted psychological complaints reported as a result of aversive memories in patients with a mental disorder; and 3) at least five clients were treated with ImRs. If a publication did not provide enough data to calculate effect-sizes, its authors were contacted by e-mail to retrieve the data. We excluded publications on the efficacy of imagery rehearsal for nightmares because its efficacy has been reported in two recent meta-analyses (Casement & Swanson, 2012; Hansen, Hofling, KronerBorowik, Stangier, & Steil, 2013). An additional reason for excluding trials on imagery rehearsal for nightmares was related to the aim of our meta-analysis to include trials that apply imagery rescripting to treat symptoms associated with memories of real aversive experiences. Whereas nightmares may develop following exposure to aversive experiences, the content of the nightmares might not represent memories of real aversive experiences. No restrictions were made upon publication language, year of publication, length of reported follow-up, or age of participants.

We searched the databases MEDLINE, PsycINFO, and Web of Science for relevant publications. The last search was conducted on March 24th, 2016 and included the following search terms: "*imagery rescripting or updating memory or imagery modification or imaginal reliving*". Following the search in the bibliographic databases, reference lists from articles that met inclusion criteria for the meta-analysis were examined. Finally, the following registers of controlled trials were searched: Australian New Zealand Clinical Trials Registry, Chinese Clinical Trial Register, Clinical Trials, Clinical Trials Registry- India, German Clinical Trials Register, ISRCTN Register, Netherlands Trial Register, and UMIN Clinical Trials Registry.

2.2. Quality assessment

Coding for the quality of studies was based on the quality analysis constructed by Cuijpers, van Straten, Bohlmeijer, Hollon, and Andersson (2010) and adjusted by Smit et al. (2012). The quality of the studies was coded based on the following questions: *Was the diagnosis determined using a semi-structured interview?, Was a treatment manual used?, Were therapists trained either specifically for the study or in a general training?, Was treatment integrity checked by supervision and/or recordings and/or standardized instruments?, Was data analyzed with intent-to-treat analysis?, Was it a randomized study?, Was randomization done by an independent third person (or computer or sealed envelopes)?, Were blinded assessors used for interviews?*, and *Were dropouts adequately reported?* Items