

What Do We Know About EMDR Therapy Research? A Bibliometric Analysis

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Bibliometric analysis is a quantitative method designed to analyze large volumes of scientific output data and to map the intellectual landscape of a specific area of knowledge by describing its scientometric indicators (e.g., number of publications and citations, etc.) and structural relationships (e.g., co-authorship patterns, keyword clustering, etc.) between its different components. In this article, methods of bibliometric analysis are applied to the corpus of publications on eye movement desensitization and reprocessing (EMDR) therapy research. A total of 1,150 papers found in the Web of Science database and published between 1994 and early 2021 were included in the analysis. Retrieved bibliometric data was analyzed and visualized using VOSViewer software. Temporal distribution of publications (number of publications per year); spatial distribution of publications (author affiliations); top journals; impact of EMDR research as assessed by highly cited publications; author co-citation as a measure of collaboration; literature co-citation as a measure of internal structure; and key terms were analyzed. The results of the study provide the readers with a broad, “one-stop overview” of the current state of research on EMDR therapy, with a focus on the quantitative characteristics of its output and on the key represented topics.

Keywords: bibliometric analysis; bibliometric visualization; EMDR; psychotherapy; scientometrics

Eye movement desensitization and reprocessing therapy (EMDR) was first introduced in 1989, when Francine Shapiro published the results of a randomized controlled trial describing the effects of the newly developed therapeutic approach on traumatic memories (Shapiro, 1989). This psychotherapy approach utilizes a standardized protocol, which follows eight phases and a three-pronged approach, and includes bilateral stimulation (most commonly, horizontal saccadic eye movements) to achieve the reprocessing of traumatic memories and their proper integration into the patient’s autobiographical memory (Valiente-Gómez et al., 2017).

Over the past thirty years, numerous randomized controlled trials (RCTs) investigating the effectiveness of EMDR therapy in the treatment of posttraumatic stress disorder (PTSD) have been conducted (Matthijssen et al., 2020) leading up to the recognition of this form of psychotherapy as a treatment of choice for PTSD by the World Health Organization (WHO,

2013). Currently, EMDR therapy is included in the majority of the international treatment guidelines for PTSD, including the ones provided by the National Institute for Health and Care Excellence (NICE) and the American Psychological Association (APA, 2017; Matthijssen et al., 2020; NICE, 2018). Moreover, given that exposure to psychological trauma, particularly during childhood, is associated with increased risk for multiple health and mental health conditions (Felitti et al., 1998; Schilling et al., 2007) and that comorbid PTSD can exacerbate other forms of psychopathology (Moore & Grubbs, 2021; Scharff et al., 2021; Zhu et al., 2017), investigations of EMDR therapy applications to the treatment of a broad range of conditions, such as psychosis, depression, anxiety disorders, substance use disorders, chronic pain, and others, have been rapidly developing in recent years (Valiente-Gómez et al., 2017).

The present study aims to apply methods of bibliometric analysis to map the present state of EMDR therapy research and to describe trends in its development.

Bibliometric analysis utilizes an array of statistical and data visualization methods to describe the status of a research field (e.g., key topics, representation of research institutions, citation activity, etc.) and to map possible changes taking place over the course of years. Bibliometric analysis was first introduced in the 1950s and is now considered to be an integral and valuable part of research evaluation methodology (Ellegaard & Wallin, 2015). Its primary advantage lies in its ability to process large volumes of unstructured data derived from a particular corpus of literature. As a method, it is often compared with other review approaches, such as meta-analysis and systematic reviews. According to Donthu et al. (2021), while traditional systematic and scoping reviews are typically conducted manually, tend to be qualitative in their methodology, and focus on narrower topics, both meta-analysis and bibliometric analysis approaches are quantitative and more equipped to handle large amounts of data. In turn, these two methods are very different in terms of usage and potential applications. Meta-analysis is primarily utilized to summarize existing empirical data by pooling and analyzing the strength of effects and relationships found in individual papers, to highlight and further analyze mixed findings present in the literature. On the other hand, as Donthu et al. (2021) point out, the purpose of bibliometric analysis is to provide a “bird’s eye” overview of a specific area of knowledge by quantifying its research output (e.g., number of publications) and influence (e.g., number of citations), mapping the intellectual structure of the field (e.g., representation of countries, institutions, and authors; co-citation patterns, key topics etc.) and its development over time (e.g., change in key topics over time, etc.).

In recent years, bibliometric analysis has been applied to several topics in behavioral sciences. These include technostress, mathematics anxiety, child maltreatment, as well as social media-related behaviors (Bondanini et al., 2020; Ersozlu & Karakus, 2019; Tran et al., 2018; Zyoud et al., 2018).

When it comes to bibliometric analysis of psychotherapy research, publications in this field are still limited. Existing studies include two earlier papers aimed at conducting bibliometric analysis of the output of two individual journals covering psychotherapy research (Borkenhagen et al., 2002; Van Raan et al., 2003); one later study of global research trends in family therapy (Lou & Lin, 2012), and two recent studies, one of which is concerned with mapping global research of CBT for schizophrenia (Fei et al., 2021), and the other aiming to provide a broad overview of trends in psychotherapy publications, focusing, in particular, on the changes in popularity of different

psychotherapy “brands” over the past 50 years (Soares et al., 2020).

The present study aims to apply the methods of bibliometric analysis to provide a “one-stop,” structural overview of EMDR, one of the prominent, evidence-based approaches to psychotherapy. To our knowledge, this is the first bibliometric study to attempt to represent a specific psychotherapy approach in its entirety (i.e., not in relation to a particular mental health concern or target of intervention). As such, the paper makes an important contribution to the field of scientometrics. Moreover, this is the largest in scale overview of EMDR therapy to date, based on a corpus of more than one thousand publications. It will allow readers to get acquainted with the number and characteristics of peer-reviewed publications that constitute the current body of research in EMDR therapy, to explore the contemporary breadth of the field, and to evaluate trends in its development.

Method

The data for this study were extracted from the Web of Science (WoS) database a comprehensive, multidisciplinary database covering over 20,000 journals and other publications (Clarivate Analytics, 2021). Of the eight indexes of the Web of Science core collection database, the following four indexes were utilized: Science Citation Expanded Index (SCI-EXPANDED), Social Sciences Citations Index (SSCI), Arts & Humanities Citations Index (AHCI), and Emerging Sources Citations Index (ESCI) Conference Proceedings Citation Index and Book Citation Index were excluded, as the present study focused on publications featured in peer-reviewed journals. Index Chemicus and Current Chemical Reactions index were excluded as irrelevant to the topic of research.

The choice of the database was determined by the type of data analyzed in the study. For research studies based on publications metadata, a database that contains comprehensive and structured data for each publication (e.g., author names and affiliations, abstracts and keywords, references and citations information) is required. Two multidisciplinary databases—the Web of Science (WoS) database or Scopus database—fit the above-mentioned criteria. While in systematic reviews it is recommended to combine data from several databases for a comprehensive coverage of publications (Visser et al., 2021), bibliometric studies often focus on one database only, because the structure of the metadata in different databases is somewhat varied and combining them is a separate complex task. Prior to extracting data, search query terms used in the present study were tested in both Scopus and Web of Science databases, yielding

approximately the same number of publications. As a result of this testing procedure, Web of Science was selected as the database for the present study.

To retrieve bibliometric data for research on EMDR therapy, the query terms “EMDR” and “eye movement desensitization and reprocessing” were used to collect publications with either of these terms included in title or abstract.

Document type included in the analysis was limited to “Article” and “Review Article” only, as these are subjected to rigorous peer-review process. Meeting abstracts, book chapters, letters to the editor, and other forms of scientific communication were excluded.

All documents conforming to this requirement were included in the analysis resulting in a publication date range from 1994 (earliest available publications across all collections of the Web of Science database) to present moment. Although the first publication by Francine Shapiro (1989) that introduced EMDR therapy was published in 1989, the earliest available publications on the topic of EMDR therapy across all collections of the Web of Science database are published in 1994. There is a possibility that the earliest publications may not have been included in the sample because they have not been indexed in the Web of Science database. However, if such publications exist, they present isolated cases, the absence of which cannot radically change the general portrait of the field obtained in the present analysis.

Data were extracted on March 31, 2021 and the retrieved data was analyzed using VOSViewer v. 1.6.17 (Van Eck & Waltman, 2010). The analysis was conducted as follows:

First, the dynamics of the development of the field of EMDR research was assessed by means of calculating the number of publications that appeared each year. Second, to localize the field of EMDR research, journals in which the articles about EMDR research were published most often, as well as countries and institutions, with which the authors of these publications were affiliated, were taken into account. Third, to identify the most influential publications in the field, a list of the most cited papers in the analyzed sample was generated.

Next, in order to identify the main concepts and themes within the field of EMDR research, a co-occurrence network analysis was conducted for both the most frequently occurring author keywords and the terms extracted from titles and abstracts by VOSviewer. Author keywords and the key terms extracted from the titles and abstracts of the articles included in the dataset constitute the two data sources for the thematic analysis of the field, complementary to each other. While author keywords highlight the most meaningful

concepts and constructs, the terms extracted from titles and abstracts provide a broader list of the most commonly used terms, complementing and extending author keywords. The results of this thematic analysis are presented in the form of network visualization, where the nodes represent author keywords or terms, and the relatedness of nodes represents the number of documents in which they occur together.

Finally, co-citation analysis of sources cited was used to explore the internal structure of the field. The idea behind this type of analysis is to identify groups or clusters of sources that are often cited jointly in the analyzed sample of articles. Articles focusing on different topics or using different methodologies are expected to cite different groups/clusters of sources. Highlighting such groups/clusters of sources one can see the thematic or disciplinary structure of the field. The result of this analysis is a sources co-citation network, where nodes are cited sources from references and their relatedness is determined based on the number of times they are cited together.

Results

Number of Publications and Their Temporal Distribution

The present study explores bibliometric indicators of EMDR therapy research from 1994 through March 2021. A total of 1,166 research articles and review papers published and included in the Web of Science database were identified and their bibliometric data downloaded for further analysis. Upon manual inspection, 16 papers were flagged as irrelevant due to employing EMDR abbreviation in the context of unrelated research (e.g., molecular biology) and the final dataset included 1,150 papers.

The analysis of temporal distribution of EMDR research, as measured by the number of publications per year, demonstrated that research output on the topic of EMDR therapy has been increasing steadily since 1994, as demonstrated in Figure 1. The peak year

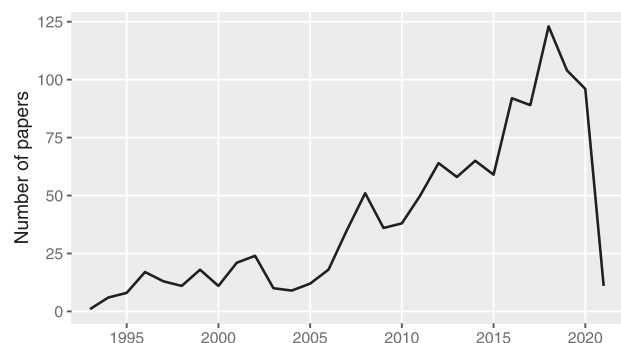


Figure 1. Number of EMDR-related papers per year.

of publication activity was 2018 with a slight decline over the next two years.

Overall, articles and reviews included in the analysis were published in 343 journals. The top five journals publishing the results of EMDR therapy research were: *Journal of EMDR Practice and Research*, *European Journal of Psychotraumatology*, *Frontiers in Psychology*, *Journal of Behavioral Therapy and Experimental Psychiatry*, and *Journal of Anxiety Disorders*.

The full list of journals that have published at least five papers on the subject of EMDR therapy research is presented in Figure 2.

Authors: Affiliations and Countries

With regard to the spatial distribution of EMDR research, authors of the papers included in the

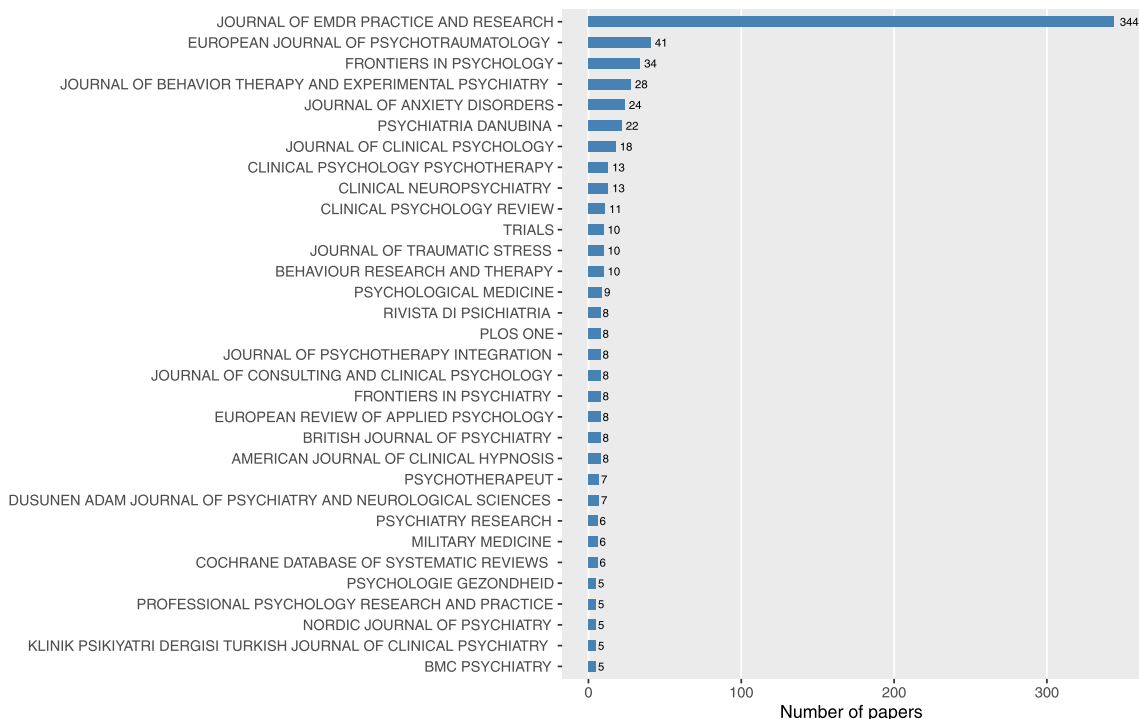


Figure 2. Top journals publishing EMDR research.

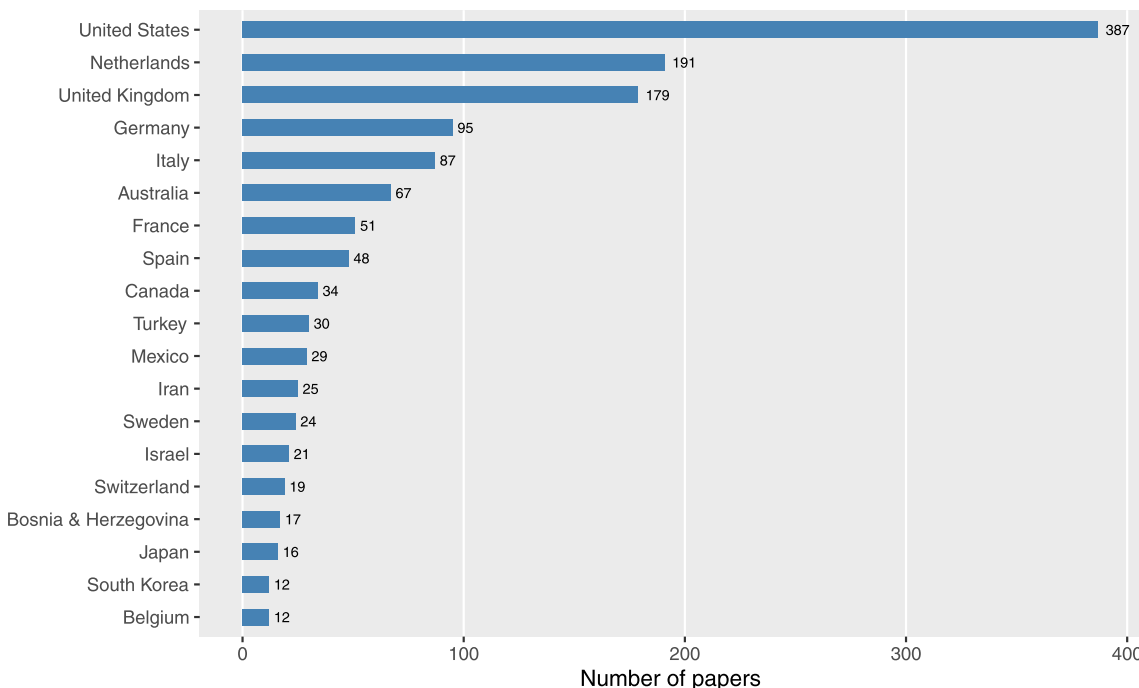


Figure 3. Top countries for EMDR research.

analysis were affiliated with academic institutions in 62 different countries. Figure 3 shows the countries with which the authors of 10 or more articles were affiliated. The top three countries producing the most publications on EMDR therapy research were the U.S., the Netherlands, and the United Kingdom.

Collaboration between countries, as assessed by co-authorship ties, is shown in Figure 4. The three leading research centers identified earlier—in the U.S., the UK, and the Netherlands—were not formed at the same time. Research on EMDR therapy in the U.S. began earlier, with research centers in the U.K.

and the Netherlands forming later. Co-authorship ties appear to be stronger between the Netherlands and the U.S. and between the U.K. and the Netherlands than between the U.K. and the U.S.

When zooming in to the level of institutions rather than countries, the top five positions of the institutions contributing the most to EMDR therapy research are occupied by four academic organizations from the Netherlands (including three universities) and one university from the U.K. The full list of institutions that have published 20 or more papers on the subject of EMDR therapy are presented in Figure 5.

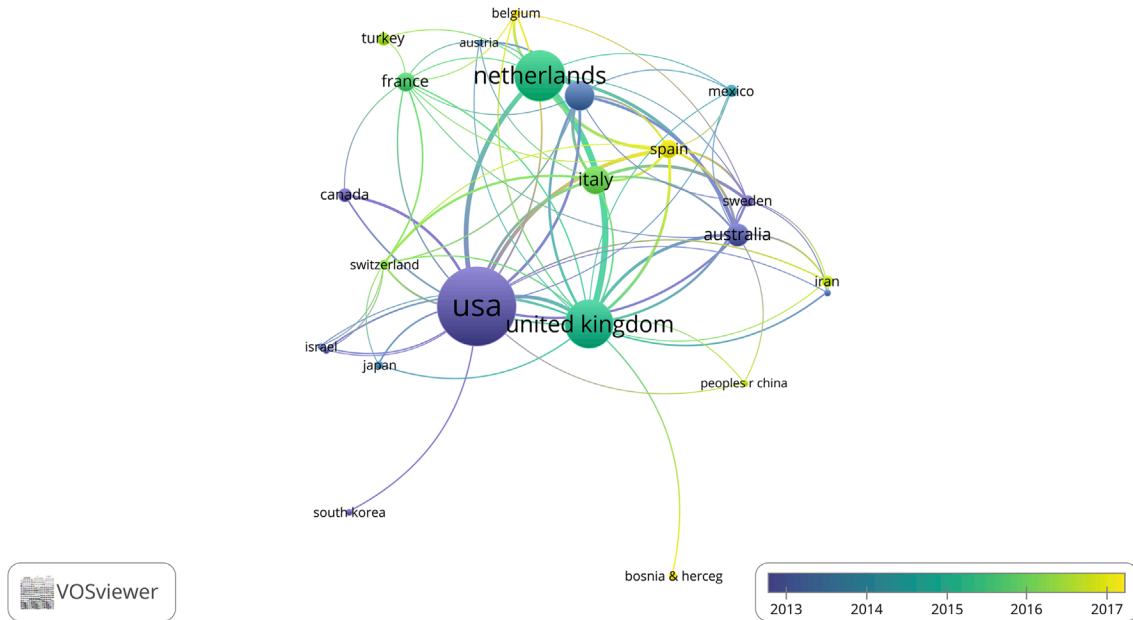


Figure 4. Country level co-authorship network.

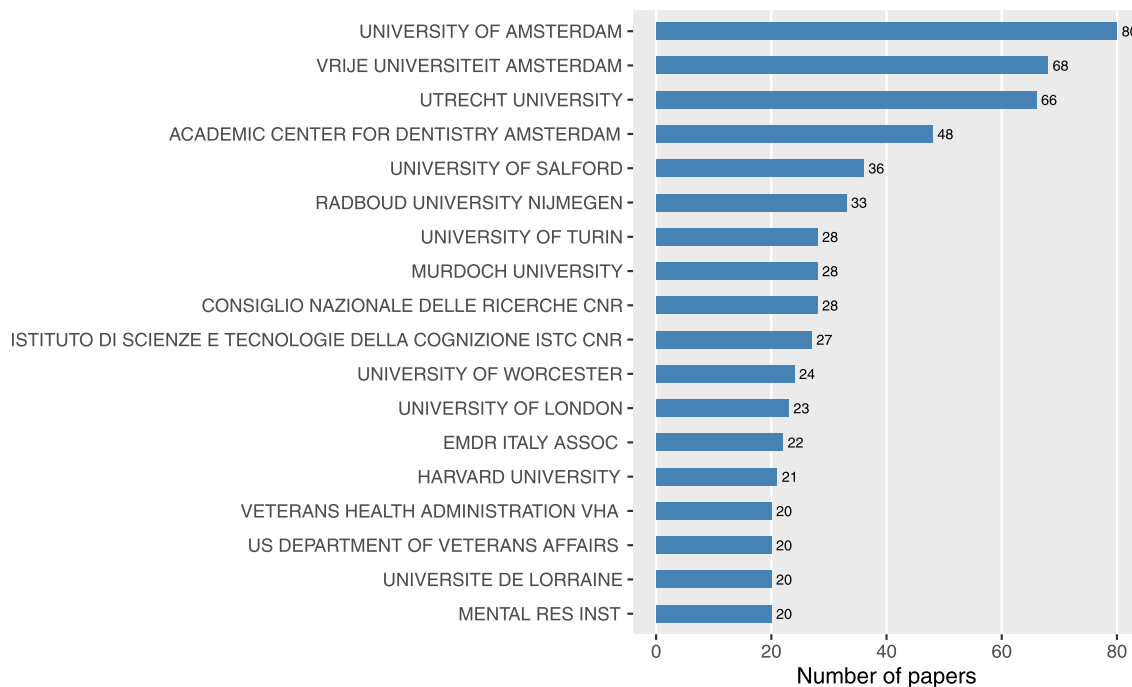


Figure 5. Top institutions for EMDR research.

Most Cited Papers

The scientific landscape of EMDR therapy research can be further characterized by the presentation of the high impact papers in the field. In Table 1, the 30 most cited papers on EMDR therapy are presented. This number of top publications was chosen because it allows to describe a sufficiently diverse set of articles in terms of date of publication and thematic focus. The earliest of these was published in 1997 and the most recent one was released in 2016. The majority of these papers ($n = 25$) reported either the results of the individual clinical trials or the results of the systematic reviews and meta-analyses aggregating data of clinical trials. The remaining papers were dedicated to the mechanisms of change in the Adaptive Information Processing model ($n = 1$), the neurobiological mechanisms behind EMDR ($n = 1$), and the role of bilateral eye movement in memory retrieval ($n = 3$). With the exception of one paper focused on the treatment of nightmare disorder, all of the treatment-related papers in this highly-cited group were dedicated to the treatment of PTSD.

Key Topics

Next, the analysis of key terms was conducted. Two types of key terms were explored—terms and author keywords. As was discussed previously in the Methods section, “terms” are extracted from titles and abstracts by VOS viewer software, while “author keywords” include the keywords supplied by the authors when submitting manuscripts to journals. The analysis of terms and author keywords allows to explore the most popular topics in a chosen research area and to assess the dynamic of their development over time.

First, the inspection of the terms map (see Figure 6) yielded four distinct clusters, denoted by the red, blue, green, and yellow colors.¹

The “Red” cluster represented the terms associated with the practice of EMDR therapy and associated clinical guidelines.

The “Blue” and “Green” clusters both seemed to represent the reports of clinical trials; however, there were some notable differences. The “Blue” cluster primarily represented those studies where the effectiveness of EMDR was explored alongside with and in comparison to the other therapeutic approaches, particularly, cognitive-behavioral therapy (CBT). This

cluster also included systematic reviews and meta-analytic research comparing the outcomes of different therapeutic approaches. On the other hand, the “Green” cluster was formed by the reports of randomized controlled trials of EMDR exclusively.

Finally, the “Yellow” cluster represented the reports of experimental studies exploring the possible cognitive underpinnings of EMDR therapy, primarily in relation to memory processes.

Next, the inspection of author keywords was conducted, and the resulting map presented a somewhat more complex picture (see Figure 7). The most commonly used key terms, across the clusters were EMDR, PTSD, and trauma. In total there were 12 identifiable clusters, of these two were excluded from the analysis as they included fewer than five items. The remaining 10 clusters are described below.

Cluster 1 (“Red”): Publications included in this cluster were primarily centered around keywords “EMDR” and “PTSD” with the inclusion of topics related to grief and/or chronic pain.

Cluster 2 (“Green”): The keywords in this cluster largely presented a combination of treatment- and psychotherapy-related terms, such as “EMDR therapy,” “psychotherapy,” “treatment,” “intervention,” “psychological trauma,” “feasibility,” and terms related to substance use and addiction, obsessive-compulsive disorder, pregnancy, and psychological trauma. It is possible that the papers rubricated under this cluster are focused on exploring the feasibility of applying EMDR to other conditions than PTSD, most commonly substance abuse-related conditions.

Cluster 3 (“Blue”): This cluster included keywords such as “childhood trauma,” “children and adolescents,” “complex trauma,” and “dissociation” indicating research primarily focused on developmental trauma and its impact. The inclusion of keywords “meta-analysis” and “systematic review” in the same cluster indicates that a proportion of papers in this cluster represent efforts directed at knowledge integration.

Cluster 4 (“Yellow”): The most frequent keyword in this cluster was “cognitive behavioral therapy” with the rest of the keywords referring to anxiety disorders and obsessive-compulsive disorder. Taking into account the inclusion of the keyword “randomized controlled trial” in the same cluster, it is possible to assume that these are the publications where EMDR is considered alongside with CBT in clinical trials of treatments for anxiety-related conditions.

Cluster 5 (“Lilac”): The most frequently occurring keyword in this cluster was “trauma.” The rest of the keywords in this cluster reflected two distinct themes.

¹Print article is black and white only. The online version of this article featuring the figures in full color can be accessed online: <https://connect.springerpub.com/content/sgremdr/16/2/76>

TABLE 1. 30 Most Cited Papers

Authors	Title	Journal	Year	Times cited
Bradley, R; Greene, J; Russ, E; Dutra, L; Westen, D	A multidimensional meta-analysis of psychotherapy for PTSD	American Journal of Psychiatry	2005	1037
Bisson, JI; Ehlers, A; Matthews, R; Pilling, S; Richards, D; Turner, S	Psychological treatments for chronic post-traumatic stress disorder—Systematic review and meta-analysis	British Journal of Psychiatry	2007	499
Powers, MB; Halpern, JM; Ferenschak, MP; Gillihan, SJ; Foa, EB	A meta-analytic review of prolonged exposure for post-traumatic stress disorder	Clinical Psychology Review	2010	475
Bisson, J; Andrew, M	Psychological treatment of post-traumatic stress disorder	Cochrane Database of Systematic Reviews	2007	445
Van Erten, ML; Taylor, S	Comparative efficacy of treatments for post-traumatic stress disorder: A meta-analysis	Clinical Psychology & Psychotherapy	1998	380
Watts, BV; Schnurr, PP; Mayo, L; Young, Y; Weeks, WB; Friedman, MJ	Meta-analysis of the efficacy of treatments for posttraumatic stress disorder	Journal of Clinical Psychiatry	2013	364
Bisson, JI; Roberts, NP; Andrew, M; Cooper, R; Lewis, C	Psychological therapies for chronic post-traumatic stress disorder (PTSD) in adults	Cochrane Database of Systematic Reviews	2013	304
Taylor, S; Thordarson, DS; Maxfield, L; Fedoroff, IC; Lovell, K; Ogronczuk, J	Comparative efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training	Journal of Consulting and Clinical Psychology	2003	278
Schottenbauer, MA; Glass, CR; Arnkoff, DB; Tendick, V; Gray, SH	Nonresponse and dropout rates in outcome studies on PTSD: Review and methodological considerations	Psychiatry-Interpersonal and Biological Processes	2008	268
Davidson, PR; Parker, KCH	Eye movement desensitization and reprocessing (EMDR): A meta-analysis	Journal of Consulting and Clinical Psychology	2001	256
Cusack, K; Jonas, DE; Forneris, CA; Wines, C; Sonis, J; Middleton, JC; Feltner, C; Brownley, KA; Olmsted, KR; Greenblatt, A; Weil, A; Gaynes, BN	Psychological treatments for adults with posttraumatic stress disorder: A systematic review and meta-analysis	Clinical Psychology Review	2016	246
Hembree, EA; Foa, EB; Dorfan, NM; Street, GP; Kowalski, J; Tu, X	Do patients drop out prematurely from exposure therapy for PTSD?	Journal of Traumatic Stress	2003	239

(continued)

TABLE 1. 30 Most Cited Papers (continued)

Authors	Title	Journal	Year	Times cited
Van der Kolk, BA; Spinazzola, J; Blaustein, ME; Hopper, JW; Hopper, EK; Korn, DL; Simpson, WB	A randomized clinical trial of eye movement desensitization and reprocessing (EMDR), fluoxetine, and pill placebo in the treatment of posttraumatic stress disorder: Treatment effects and long-term maintenance	Journal of Clinical Psychiatry	2007	224
Seidler, GH; Wagner, FE	Comparing the efficacy of EMDR and trauma-focused cognitive-behavioral therapy in the treatment of PTSD: a meta-analytic study	Psychological Medicine	2006	224
Rothbaum, BO; Astin, MC; Marsteller, F	Prolonged exposure versus eye movement desensitization and reprocessing (EMDR) for PTSD rape victims	Journal of Traumatic Stress	2005	222
Stickgold, R	EMDR: A putative neurobiological mechanism of action	Journal of Clinical Psychology	2002	219
Ehnholt, KA; Yule, W	Practitioner Review: Assessment and treatment of refugee children and adolescents who have experienced war-related trauma	Journal of Child Psychology and Psychiatry	2006	207
Gunter, RW; Bodner, GE	How eye movements affect unpleasant memories: Support for a working-memory account	Behaviour Research and Therapy	2008	190
Devilly, GJ; Spence, SH	The relative efficacy and treatment distress of EMDR and a cognitive-behavior trauma treatment protocol in the amelioration of Posttraumatic Stress disorder	Journal of Anxiety Disorders	1999	165
Wilson, SA; Becker, LA; Tinker, RH	Eye-movement desensitization and reprocessing (EMDR) treatment for psychologically traumatized individuals	Journal of Consulting and Clinical Psychology	1995	163
Ironson, G; Freund, B; Strauss, JL; Williams, J	Comparison of two treatments for traumatic stress: A community-based study of EMDR and prolonged exposure	Journal of Clinical Psychology	2002	154
Carlson, JG; Chemtob, CM; Rusnak, K; Hedlund, NL; Muraoka, MY	Eye movement desensitization and reprocessing (EMDR) treatment for combat-related posttraumatic stress disorder	Journal of Traumatic Stress	1998	152

TABLE 1. 30 Most Cited Papers (continued)

Authors	Title	Journal	Year	Times cited
Aurora, RN; Zak, RS; Auerbach, SH; Casey, KR; Chowdhuri, S; Karippot, A; Maganti, RK; Ramar, K; Kristo, DA; Bista, SR; Lamm, CI; Morgenthaler, TI	Best Practice Guide for the Treatment of Nightmare Disorder in Adults	Journal of Clinical Sleep Medicine	2010	150
Rothbaum, BO	A controlled study of eye movement desensitization and reprocessing in the treatment of posttraumatic stress disorder sexual assault victims	Bulletin of the Menninger Clinic	1997	148
Christman, SD; Garvey, KJ; Propper, RE; Phaneuf, KA	Bilateral eye movements enhance the retrieval of episodic memories	Neuropsychology	2003	146
Van den Berg, DPG; De Bont, PAJM; Van der Vleugel, BM; De Roos, C; De Jongh, A; Van Minnen, A; Van der Gaag, M	Prolonged exposure vs eye movement desensitization and reprocessing vs waiting list for posttraumatic stress disorder in patients with a psychotic disorder a randomized clinical trial	Jama Psychiatry	2015	143
Lee, CW; Cuijpers, P	A meta-analysis of the contribution of eye movements in processing emotional memories	Journal of Behavior Therapy and Experimental Psychiatry	2013	140
Chemtob, CM; Nakashima, J; Carlson, JG	Brief treatment for elementary school children with disaster-related posttraumatic stress disorder: A field study	Journal of Clinical Psychology	2002	137
Solomon, RM; Shapiro, F	EMDR and the adaptive information processing model potential mechanisms of change	Journal of EMDR Practice and Research	2008	135
Ehring, T; Welboren, R; Morina, N; Wicherts, JM; Freitag, J; Emmelkamp, PMG	Meta-analysis of psychological treatments for posttraumatic stress disorder in adult survivors of childhood abuse	Clinical Psychology Review	2014	123

Discussion

Key Findings

The goal of the study reported in this article was to provide a “one-step,” broad overview of the current state of EMDR therapy research and to identify its developmental trends.

Growth. Changes in the number of publications from 1994 to 2020 clearly demonstrate that EMDR therapy research is a rapidly developing, expanding field, as demonstrated by continuing growth in the number of publications per year since 2005.

Key Players. Authors conducting research in the field of EMDR therapy are associated with academic institutions in 62 different countries. The majority of these authors work in high-income countries located in Western Europe and North America; however, there is also representation of other regions of the world in the academic affiliations of top researchers. Temporal trends in the development of key research centers indicate that in parallel with established hubs in the U.S., the Netherlands, and the United Kingdom, new centers are emerging in Spain, Italy, Belgium, Turkey, Bosnia & Herzegovina, Iran, and China.

Impact. A total of 1,150 papers published in 343 journals were included in the analysis. Among the top journals (i.e., those publishing the most research on EMDR) identified in the dataset ($n = 32$), 5 publications had an impact factor (IF) higher than 1.0 and lower than 2.0; 6 publications had an IF higher than 2.0 and lower than 3.0; and 12 publications had an IF greater than 3.0. The three publications with the highest IF were the *Clinical Psychology Review* (IF 2020 = 12.79), the *Cochrane Database for Systematic Reviews* (IF 2020 = 9.289), and *Psychological Medicine* (IF 2020 = 7.723). IF is a standardized measure reflecting the mean number of citations attained by the articles published in a particular journal (Garfield, 1999). While the concept of IF and its role in academic publishing has been criticized, it remains a popular measure of journals’ activity and output. Papers published in peer-reviewed journals with high IF gain more visibility and are more likely to be read and cited, thus exerting more intellectual influence. Striving to increase the number of publications on EMDR therapy in high-impact journals could be an important strategy in increasing the visibility and impact of this field of research.

It is important to note that EMDR research appears to be published in a wide range of journals,

going beyond the narrowly specialized niche. Journals included in the list of top publications represent a broad range of fields, including general psychiatry, clinical psychology, applied psychology, psychotherapy, and others. *Journal of EMDR Practice and Research* appears to be the most active outlet of EMDR research, having published 344 papers included in the dataset (32.8% of the total number of publications). Here it must be noted that, while incredibly influential within the community of EMDR therapists and researchers, the *Journal of EMDR Practice and Research* is not universally included in library subscriptions of academic institutions and research centers, potentially limiting the visibility and impact of EMDR research.

Finally, the impact of EMDR therapy research is reflected in the list of the most highly cited publications in the dataset. The analysis of this list showed that, with the exception of one paper, all of the treatment-related articles in the highly-cited group were focused on the treatment of PTSD. This means that while there is a growing interest in expanding the applications of EMDR therapy beyond the treatment of PTSD and psychological trauma, none of the publications on treating other conditions have so far managed to reach comparable levels of visibility and impact.

Key Topics. The analysis of keywords and terms used in a given field allows to present the main topics addressed in a chosen research area and to assess the dynamic of their development over time. The analysis of WoS key terms associated with EMDR therapy research demonstrated its distribution into the following distinct domains: a) EMDR therapy practice and related guidelines; b) clinical trials; c) systematic reviews; and b) experimental psychology and neuroscience studies, primarily concerned with the role of eye movement in memory processing and consolidation.

The analysis of author keywords provided a more nuanced portrayal of research interests pursued by EMDR therapy scholars. These cover a broad range of topics, expanding into a variety of clinical issues (e.g., substance abuse, chronic pain, psychosis, etc.), interventions (e.g., group therapy, early interventions, etc.), and populations (e.g., children and adolescents, pregnant women, etc.)

Finally, changes over time in key terms and author keyword usage were investigated to explore emerging new topics in the field of EMDR therapy research. Temporal changes in key terms demonstrated the growing proportion of papers reporting the results

of randomized controlled trials and papers presenting systematic reviews, the latter demonstrating the field's active engagement in the critical analysis of its development and its interest in promotion of its research findings into clinical practice. Systematic reviews' capacity to identify, evaluate, and summarize the findings from all relevant individual studies on a particular health-related issue makes scientific evidence more accessible to decision makers and clinicians working in the field (Gopalakrishnan & Ganeshkumar, 2013). Therefore, the growth in the number of systematic reviews in EMDR therapy research may play an important role in increasing the visibility of EMDR therapy and its applications.

At the level of author keyword usage, the emergence of the following topics was noted: a) early interventions after critical incidents (e.g., earthquakes); b) EMDR with refugees; c) use of EMDR therapy with adolescents; d) applications of EMDR therapy in the treatment of severe mental health conditions (e.g., schizophrenia, bipolar disorder, etc.); e) EMDR therapy in the treatment of anxiety and depression; f) EMDR therapy for somatic conditions (e.g., cancer, phantom limb pain, etc.); g) EMDR during pregnancy, and h) memory reconsolidation and mechanisms of action in the domains of cognitive and neuroscience research.

Limitations

Several limitations of the present study must be discussed. First, the Web of Science database was the only one used to generate bibliometric data for the analysis. As a result, it is possible that some existing publications from non-WOS journals could have been missed. Second, only research articles and reviews were included in the analysis; therefore, missing a number of potentially important data sources, such as conference proceedings, books or book chapters, grey literature, etc. Finally, publications in languages other than English were not included in the analysis, which may have resulted in a somewhat skewed representation of the field.

Conclusions

This is the first study to conduct a bibliometric analysis of almost three decades of scientific research on EMDR therapy. It provides a "one-stop" overview of the current status of research publications on the subject of EMDR therapy, with a particular focus on describing the key players in the field, the overall impact and influence of EMDR research (as assessed

by high-impact publications), and the key topics represented in the corpus of literature covered by the present study.

The study also makes a significant contribution to the emerging area of scientometric studies of psychotherapy research, by presenting the analysis of one of the rapidly developing, evidence-based approaches to psychotherapy in its entirety (i.e., not in relation to a particular mental health concern or target of intervention) and identifying its current status and developmental trends.

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