Received: 14 November 2023 | Revised: 6 February 2024 | Accepted: 7 February 2024

DOI: 10.1002/cpp.2963

COMPREHENSIVE REVIEW

WILEY

A bibliometric analysis of the quantitative schema therapy literature

Pamela D. Pilkington [1,2,3] | Gery C. Karantzas [2,3]

[1]School of Behavioural and Health Sciences, Australian Catholic University, Fitzroy, Victoria, Australia

[2]School of Psychology, Deakin University, Geelong, Victoria, Australia

[3]Centre for Social and Early Emotional Development, Deakin University, Geelong, Victoria, Australia

Correspondence
Pam Pilkington, School of Behavioural and Health Sciences, Faculty of Health Sciences, Australian Catholic University, Locked Bag 4115, Fitzroy, Victoria, 3065 Australia.
Email: pam.pilkington@deakin.edu.au

Funding information
None.

Abstract

Background: The evidence base for schema therapy has evolved significantly since it was first developed by Jeffrey Young in the 1990s. The aim of this bibliometric analysis was to summarize the trends and characteristics of the quantitative literature on schema therapy.

Method: PsycINFO, PubMed and CINAHL Complete databases were last searched on 1 June 2023 following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 statement to identify peer-reviewed journal articles written in English that reported on original quantitative research on schema therapy or schema therapy constructs. *NVivo* was used to complete a descriptive analysis of the bibliographic, sample and study characteristics, and a coding framework was applied to capture the aspect of the schema therapy model that was the focus of each study, as well as the study context (e.g., the population or outcomes under investigation). *SciVal* was used to complete citations and authorship analyses. *VOSviewer* was used to examine co-authorship networks.

Results: A total of 704 quantitative studies on schema therapy were published by 483 unique first authors between 1994 and mid-2023. Studies predominantly used correlational designs with small samples (*Mdn* $N = 153$) of mostly females aged 18 years or older. The articles tended to focus on early maladaptive schemas, rather than schema domains or schema modes. Schema therapy and its concepts were most frequently studied in the context of depression and personality disorders. *SciVal* analyses indicated that, on average, articles were cited 27 times, with a Field Weighted Citation Impact of 1.02.

Conclusions: Schema therapy research output appears to have slowed in recent years and several critical research gaps were evident. Areas of high priority for future research include schema modes and coping responses, and the use of developmental and longitudinal designs to evaluate several key causal assumptions in the theory underpinning schema therapy.

KEYWORDS
bibliometric analysis, early maladaptive schemas, schema therapy

1 | INTRODUCTION

The present study reports on the findings of a bibliometric analysis of the quantitative studies published on schema therapy. Schema therapy, developed by Jeffrey Young in the 1990s, is an integrative approach that incorporates techniques from cognitive, psychodynamic, emotion-focused, and Gestalt therapies (Young, 1999, 2003). The therapy was initially developed as an alternative approach to treat those with entrenched and chronic psychological disorders who did not respond to traditional cognitive behavioural therapy approaches. Recent systematic reviews and meta-analyses have indicated that there is limited evidence for several key aspects of the schema therapy model and its effectiveness (e.g., Masley et al., 2012; Peeters et al., 2021; Pilkington et al., 2021; Taylor et al., 2017). This suggests that the accumulation of research evidence for schema therapy may be lagging behind its clinical uptake. A bibliometric analysis that canvases the quantitative research on schema therapy conducted to date is needed to evaluate the status of the field's empirical basis.

In contrast to systematic reviews, which are targeted to specific research questions and thus narrow in scope, a bibliometric analysis provides a quantitative evaluation of the publication trends and characteristics of an entire field. A comprehensive examination of the bibliometric features of the quantitative schema therapy literature can clarify the field's social and intellectual structure (e.g., author collaboration patterns), topic coverage and impact, and emerging trends. The resulting insights into the progress and status of this field can contribute to the development of a clear research agenda to maintain the status of schema therapy as an evidence-based approach.

To contextualize the findings of this bibliometric analysis, such that readers can understand the concepts and terms that feature in the reporting of the results, we provide a brief overview of the schema therapy model below.

Key Practitioner Messages

- The output of schema therapy research appears to have slowed in recent years, indicating a need for increased efforts to progress the evidence base for clinical practice.
- Developmental studies beginning in infancy and childhood are needed to gain empirical insights into the formation of early maladaptive schemas and schema modes early in life.
- The clinical application of schema therapy centres on increasing awareness of modes and facilitating adaptive dialogues between modes. Schema modes are the focus of less than 10% of the existing quantitative studies on schema therapy.
- Schema therapy is centred on the premise that unmet emotional needs predispose and perpetuate mental health and interpersonal problems. Less than 1% of the literature on schema therapy has focused on emotional or psychological needs.

2 | THE SCHEMA THERAPY MODEL: FUNDAMENTAL CONSTRUCTS

Schemas were first identified as therapeutic targets in the context of cognitive therapy. Beck (1964, 1991, 1993) described schemas as mental frameworks about oneself, the world, and the future, that increase vulnerability to mental illness. Young extended Beck's work by conceptualizing Early Maladaptive Schemas (EMSs) (Young, 1999, 2003). EMSs are defined as dysfunctional mental representations about oneself and one's relationships with others (Young et al., 2003). EMSs are theorized to form early in life and persist into adulthood, increasing one's risk of psychopathology (Bishop et al., 2022; Maher et al., 2022) and relational difficulties (Janovsky et al., 2020; Young et al., 2003). Schema therapy seeks to address EMSs by using cognitive, behavioural and emotion-focused interventions (e.g., imagery rescripting) and by meeting the client's emotional needs within the limits of the therapeutic relationship (i.e., limited reparenting; Farrell et al., 2014; Hoffart Lunding & Hoffart, 2016).

The schema therapy model encompasses four main concepts: (1) EMSs, (2) core emotional needs, (3) schema coping styles and responses and (4) schema modes. EMSs are theorized to develop when five core emotional needs are not adequately met early in life. These five needs relate to (1) experiencing secure attachment relationships, (2) developing a sense of autonomy and competence, (3) having the freedom to express needs and emotions, (4) the opportunity for spontaneity and play and (5) the setting of realistic limits and the capacity for self-control (Karantzas et al., 2022; Pilkington et al., 2021; Young et al., 2003). Young identified 18 EMSs, grouped into five higher order domains that are assumed to align with the five unmet needs (see Table 1; Young et al., 2003). EMSs in the disconnection rejection domain (abandonment, emotional deprivation, social isolation, defectiveness shame and mistrust abuse) relate to feeling unlovable and expecting to be abandoned, maltreated, uncared for and rejected. EMSs in the impaired autonomy domain (dependence incompetence, failure, vulnerability to harm and enmeshment) relate to perceiving oneself as incompetent, unlikely to succeed, lacking agency and unable to take care of or take responsibility for oneself. The impaired limits domain EMSs (entitlement and insufficient self-control) involve difficulties with self-regulation, impulsivity and reciprocity. EMSs in the other-directedness domain (self-sacrifice, subjugation and approval seeking) relate to prioritizing the needs of others, suppressing one's emotions, preferences and needs and excessively seeking approval and reassurance. Lastly, EMSs in the over-vigilance and inhibition domain (unrelenting standards, emotional inhibition, punitiveness and negativity pessimism) relate to excessive self-control, anticipating negative outcomes and holding unrealistically high standards. EMSs are typically assessed via self-report using the Young Schema Questionnaire (YSQ) (Young & Brown, 2005). Various domain-level models have been proposed, including a four-domain

TABLE 1 Core emotional needs, schema domains and EMS.

Schema domain	Unmet emotional need	Domain definition	EMS	Representative items from the YSQ-S3
Disconnection/ rejection	Safety, nurturance and secure attachment	Expectations that one's needs for safety and nurturance will not be consistently met	Emotional deprivation	I haven't had someone to nurture me, share themself with me or care deeply about everything that happens to me.
			Abandonment	I worry that people I feel close to will leave me or abandon me.
			Defectiveness shame	I feel that I'm not lovable.
			Mistrust abuse	I feel that I cannot let my guard down in the presence of other people, or else they will intentionally hurt me.
			Social isolation	I'm fundamentally different from other people.
Impaired autonomy and performance	Autonomy, competence and identity	Expectations that one will be unable to function independently, protect oneself or succeed in life	Failure	I'm incompetent when it comes to achievement.
			Dependence/ incompetence	I do not feel capable of getting by on my own in everyday life.
			Vulnerability to harm	I worry that I'm developing a serious illness, even though nothing serious has been diagnosed by a doctor.
			Enmeshment/ undeveloped self	I often feel I do not have a separate identity from my parent(s) or partner.
Impaired limits	Realistic limits and self-control	Difficulties with frustration tolerance, considering others or following social rules or conventions	Entitlement/ grandiosity	I'm special and shouldn't have to accept many of the restrictions or limitations placed on other people.
			Insufficient self-control/self-discipline	I can't seem to discipline myself to complete most routine or boring tasks.
Other-directedness	Freedom to express needs and emotions	An excessive focus on the needs, wants and feelings of others, at the expense of one's own needs and feelings.	Subjugation	In relationships, I usually let the other person have the upper hand.
			Self-sacrifice	I'm so busy doing things for the people that I care about that I have little time for myself.
			Approval seeking/ recognition seeking	Unless I get a lot of attention from others, I feel less important.
Over-vigilance and Inhibition	Spontaneity and play	Emphasis on meeting excessively rigid rules and expectations at the expense of self-expression, relaxation and joy	Negativity pessimism	You can't be too careful; something will almost always go wrong.
			Emotional inhibition	I control myself so much that many people think I am unemotional or unfeeling.
			Unrelenting standards/hyper-criticalness	I try to do my best; I can't settle for 'good enough'.
			Punitiveness	If I make a mistake, I deserve to be punished.

Abbreviation: EMS, early maladaptive schema.

EMSs model (Bach et al., 2018), but factor analyses of the YSQ have produced inconsistent results (Thimm, 2022).

EMS activation is distressing and often accompanied by self-defeating cognitive and behavioural coping responses or strategies (Arntz et al., 2021; Young et al., 2003). Strategies that are habitually used to cope with EMSs are referred to as schema coping styles. Young et al. (2003) categorized coping styles into three broad categories: overcompensation, surrender and avoidance. Over-compensation (termed inversion by Arntz et al., 2021) refers to coping with EMS activation by thinking, acting and relating to others as though the opposite of the EMS were true, surrender (termed resignation by Arntz et al., 2021) refers to accepting the EMS as true, whilst avoidance refers to avoiding situations and triggers that activate the EMS. In adulthood, maladaptive coping patterns are thought to prevent the satisfaction of core emotional needs, thus perpetuating EMSs. Therefore, a key goal of schema therapy is to reduce the use of maladaptive coping responses (Young et al., 2003). However, few studies have investigated schema coping, presumably because existing measures of coping responses such as the Young–Rygh Avoidance Inventory (Young, 1994) were originally developed for clinical use, not research, and there is limited information available on their psychometric properties.

A more recent evolution of the schema therapy model is schema modes. Schema modes are the momentary emotional, cognitive, behavioural and neurobiological states triggered by EMS activation (Young et al., 2003). The concept of modes was introduced to the model to aid in the conceptualization and treatment of individuals with personality disorders, who tend to shift rapidly between emotional states (Young et al., 2003). The modes are categorized into parent, child, coping and healthy adult modes (see Young et al., 2003, and Arntz et al., 2021, for detailed descriptions of schema modes). Modes are typically measured via self-report using the Schema Mode Inventory (SMI) (Lobbestael et al., 2010). However, this questionnaire was initially developed to measure modes in individuals with personality disorders and lacks subscales for modes known clinically to be important in other presentations, such as the over-controller mode in eating disorders (Simpson et al., 2018). Although a key target of schema therapy is developing the capacity to recognize and regulate modes, empirical support for the schema modes concept appears to be limited, particularly in terms of how modes develop and their neurological correlates (Lazarus & Rafaeli, 2021).

3 | SCHEMA THERAPY EFFECTIVENESS AND MECHANISMS OF CHANGE

Reviews on schema therapy effectiveness (Masley et al., 2012; Peeters et al., 2021; Taylor et al., 2017) have highlighted that the evidence thus far is primarily based on non-randomized trials and case studies. Although Randomized Controlled Trials (RCTs) have demonstrated that schema therapy is an effective treatment for personality disorders (e.g., Arntz et al., 2022; Bamelis et al., 2014), there is less research available for its effect on other mental health outcomes. For example, although schema therapy is commonly used to treat individuals with depression in clinical practice, there is—thus far—minimal evidence that schema therapy is more effective than other psychotherapeutic approaches in this area (Kopf-Beck et al., 2024; Rek et al., 2023). Furthermore, although several recent studies have examined treatment mechanisms (e.g., Renner et al., 2018; Yakın et al., 2020), the specific aspects of schema therapy that mediate positive treatment outcomes remain largely unclear. Clinically, schema therapy emphasizes experiential techniques and limited reparenting as key drivers of therapeutic change, but the mediators and moderators of treatment effects appear to have received little empirical attention.

Several of the empirical gaps highlighted above were recognized in a recent Delphi consensus study on schema therapy research priorities (Pilkington et al., 2023). Based on the ratings of an international panel of more than 50 academic and clinical experts in schema therapy, the areas deemed priority for future schema therapy research related to establishing the basic science of the schema therapy model, evaluating the effectiveness of schema therapy across a range of clinical presentations, and improved understanding of the mechanisms of change. Although this study provided important insights into what research is desired, the status of the published literature remains unclear. To provide a clear way forward for schema therapy research, clinicians' and researchers' perceptions of the research priorities need to be integrated with an understanding of the current state of the field. Establishing the status of the literature to date could illuminate the extent to which the existing evidence aligns with the desired topics of research. These insights into the points of convergence between gaps in the evidence base and the directions for future research identified by the Delphi panel could guide where funding and efforts are best targeted.

4 | THE CURRENT STUDY

This study aimed to complete a comprehensive bibliometric analysis of the quantitative schema therapy literature to date. This bibliometric analysis provides an opportunity to evaluate the status of the schema therapy evidence base across several domains: (1) basic bibliographic characteristics, (2) the methodological characteristics of the studies (e.g., study design and sample characteristics), (3) the extent to which various aspects of the schema therapy model (e.g., schema modes) have been investigated, (4) the context and outcomes that have been the focus of the research and (5) authorship collaboration and citation trends.

Summarizing the basic bibliometrics of the literature, such as publications per year and the journals where articles are most frequently published, can provide insights into the standing of the schema therapy literature in terms of the quantity and quality of the output. Examining sample characteristics and methodological approaches can give important information about the extent to which researchers are using robust methods (e.g., longitudinal designs) and the extent to which the evidence can be generalized to certain populations

(e.g., specific age groups and genders). Evaluating which aspects of the schema therapy model were the focus of each study can illuminate which schema therapy concepts have received greater empirical attention, which concepts are under-studied and the extent to which the research aligns with current practice. Further to this, we sought to go beyond the typical keyword analysis employed in previous bibliometric analyses to ascertain the topics covered by the literature, by applying a novel coding framework to summarize up to three concepts, outcomes, populations and predictors per study. This allows us to be able to provide a more fine-grained analysis of the context within which the schema therapy model has been investigated. Finally, analysing the citation, viewing and authorship trends can provide insights into the impact and uptake of the schema therapy literature, highlight the most impactful articles and authors and identify the geographic regions and research teams that are most active in the field. The information gained from this analysis can contribute to evaluating schema therapy's status as an evidence-based therapy and stimulate further research in the field.

5 | METHOD

We completed a bibliometric analysis of the quantitative literature on schema therapy. The literature was identified using a systematic approach that complied with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021) (see Online Supplement 1 for PRISMA checklist). The systematic search was not registered.

5.1 | Systematic search

The electronic databases PsycINFO (EBSCOHost), PubMed (National Library of Medicine) and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) (EBSCOHost) were first searched on 29 May 2022 using the search terms 'Young AND schema'. An update search replicating the original search (limited to May 2022 onwards) was completed on 1 June 2023. The search terms could appear anywhere in the full text. Where possible, searches were limited to peer-reviewed articles. No publication date limits were applied. The search string was broad to reduce the chance of relevant articles being omitted.

5.2 | Selection process

Studies were required to fulfil the following eligibility criteria: (a) reported on original quantitative research on schema therapy or its concepts (e.g., early maladaptive schemas, schema modes and coping styles), (b) were published in a peer-reviewed journal article and (c) were written in or translated into English. Articles were excluded if they were protocols, reviews, meta-analyses, commentaries, corrections, qualitative studies or qualitative case studies. The first author screened the records using *Rayyan* (Ouzzani et al., 2016). Records were screened based on their abstracts and titles. Articles included based on the initial screening were subsequently screened based on their full text.

5.3 | Data extraction and analysis

The included articles were imported into *NVivo 12 Pro* via Endnote. The first author used *Nvivo* to extract and code each article across five domains. These were (a) bibliographic data, (b) sample characteristics, (c) study design, (d) the aspect of schema therapy that was the focus of the study and (e) the context (e.g., population and associated factors) or outcomes (e.g., depression) that were examined by each study. The coding scheme (outlined below) was developed by the first author and reviewed by the second author. A research fellow independently extracted data from 20% of the included articles. The inter-rater agreement between the first author and the research fellow was 91%. Inconsistencies were resolved through discussion.

5.3.1 | Bibliographic data

NVivo's file classification functionality was used to automatically collate the bibliographic data (author, journal title, keywords, article title and year). The corresponding author's country was coded manually. *Scimago* and *Clarivate Journal Citations Index* were used to obtain journal metrics (the 5-year impact factor and quartile rankings) for the top 10 journals where the articles were most frequently published. The 5-year impact factor is the journal's number of citations in the reference year, divided by the total number of articles published in the five previous years. The quartile reflects the ranking of the journal based on its citation impact. These metrics provide insights into the extent to which quantitative schema therapy literature is being published in high-standing journals.

5.3.2 | Sample characteristics

Sample characteristics included sample size, gender (more than 60% male, more than 60% female and gender-balanced), sample age group (children, adolescents, adults, older adults and mixed), sample type (clinical, forensic, general population—community, general population—university students, other and mixed).

5.3.3 | Study design

Study design included the classification of studies in relation to their methodological approach (correlational, comparison between clinical group/s and/or healthy controls, psychometric evaluation, non-randomized trial, RCT, longitudinal, systematic case study, medical records, experimental and observational).

5.3.4 | Schema therapy focus

Data were also coded in terms of the aspect of schema therapy that was the focus of each article (EMSs, schema domains, schema therapy effectiveness, schema modes, schema coping responses and styles, adaptive schemas, recalled parenting patterns assumed to result in schemas and other). A proportion of studies evaluated the effectiveness of therapies other than schema therapy [e.g., cognitive behavioural therapy (CBT)] but used schema therapy measures such as the YSQ and were thus coded as 'The effect of other treatment approaches on schema therapy constructs'.

5.3.5 | Study context and outcomes

Up to three aspects relating to the context and outcomes of the research were coded per study. These aspects could relate to the constructs examined (e.g., outcomes such as depression and predictors such as childhood adversity) as well as study populations (e.g., individuals with BPD). The number of codes was limited to three as it was not feasible to code more given the volume of included articles.

5.3.6 | Citations, views and authorship analysis

Citation analyses were completed at the article and author level to identify the most influential studies and researchers in the literature. All citation analyses were completed on 14 August 2023 via *SciVal*. *SciVal* uses output and usage data from Scopus, an independent database of abstract and citation information from 1996 that covers over 26,000 journals. At the time of analysis, the data were complete up to 9 August 2023. A total of 669 of the 704 articles (95%) could be correctly linked by *SciVal* to Scopus data. Therefore, the citation and authorship analyses are based on these 669 articles.

The overall Field-Weighted Citation Impact (FWCI) of the articles and the average number of citations per publication were extracted to evaluate the performance of the quantitative schema therapy literature. The FWCI reflects the number of citations received by the articles in the current dataset, compared to the average number of citations received by all other similar articles in the field of psychology in Scopus (i.e., articles coded by *SciVal* as falling within the discipline of psychology that were published in the same timeframe). A FWCI of 1 indicates that the articles have been cited at a rate comparable to the global average for similar articles. A FWCI greater than 1.00 indicates the articles have been cited more than the global average, whilst a number lower than 1.00 indicates the articles were cited less than average. This metric thus provides a useful benchmark to evaluate the extent to which quantitative schema therapy literature has been cited as a whole, relative to the global average. To identify the most influential articles within the broader body of literature, we also identified the 10 articles with the highest number of citations.

To further evaluate the performance and reach of the quantitative schema therapy literature, we extracted the number of views per publication and the Field-Weighted Views Impact (FWVI). The views per publication is the average number of times each article has been viewed online. The FWVI reflects how many times the articles have been viewed, in comparison to the average number of views of all other similar publications. These viewing metrics are useful to gauge the extent to which research is attracting interest and readership. Considering views alongside citation impacts is important given that a sizeable proportion of individuals who read peer-reviewed journal articles are not reflected in citation counts as they do not conduct research and publish articles themselves (e.g., clinicians).

To obtain insights into the key contributors to the quantitative schema therapy literature, we identified the 10 authors with the greatest research output. For each of these authors, we calculated the total citation counts and the average number of citations received per article for their articles in the current dataset.

Finally, author collaboration patterns were identified using a network visualization of co-author clusters created using *VosViewer* (van Eck & Waltman, 2023). Clusters were determined based on the number of co-authored articles by authors of three or more articles (fractional counting). Colours within the visualization indicate which cluster each author belongs to, whilst the distance between authors approximately indicates the relatedness of the authors in terms of co-authorship links. The closer two authors are located to one another, the more frequently they authored articles with each other. The size of the nodes indicates the degree of centrality, reflecting the total link strength for the corresponding author (i.e., the larger the node, the more they have co-authored with others).

6 | RESULTS

The flow of studies through the screening and selection process is summarized in the PRISMA flow diagram in Figure 1. A total of 704 articles were included in the bibliometric analysis (see Online Supplement 2 for the list of references).

6.1 | Bibliographic data

Figure 2 outlines the number of articles published each year. The 704 articles were published in 252 journals between 1994 and mid-2023. The volume of quantitative studies on schema therapy and its concepts has generally increased but peaked in 2018. Table 2 lists the 10 journals where the articles were most frequently published. Of the 10 journals where articles were most frequently published, 60% had impact factors ranked in the top 25% [first quartile (Q1)] of journals in their subject categories in 2022.

FIGURE 1 PRISMA flow diagram.

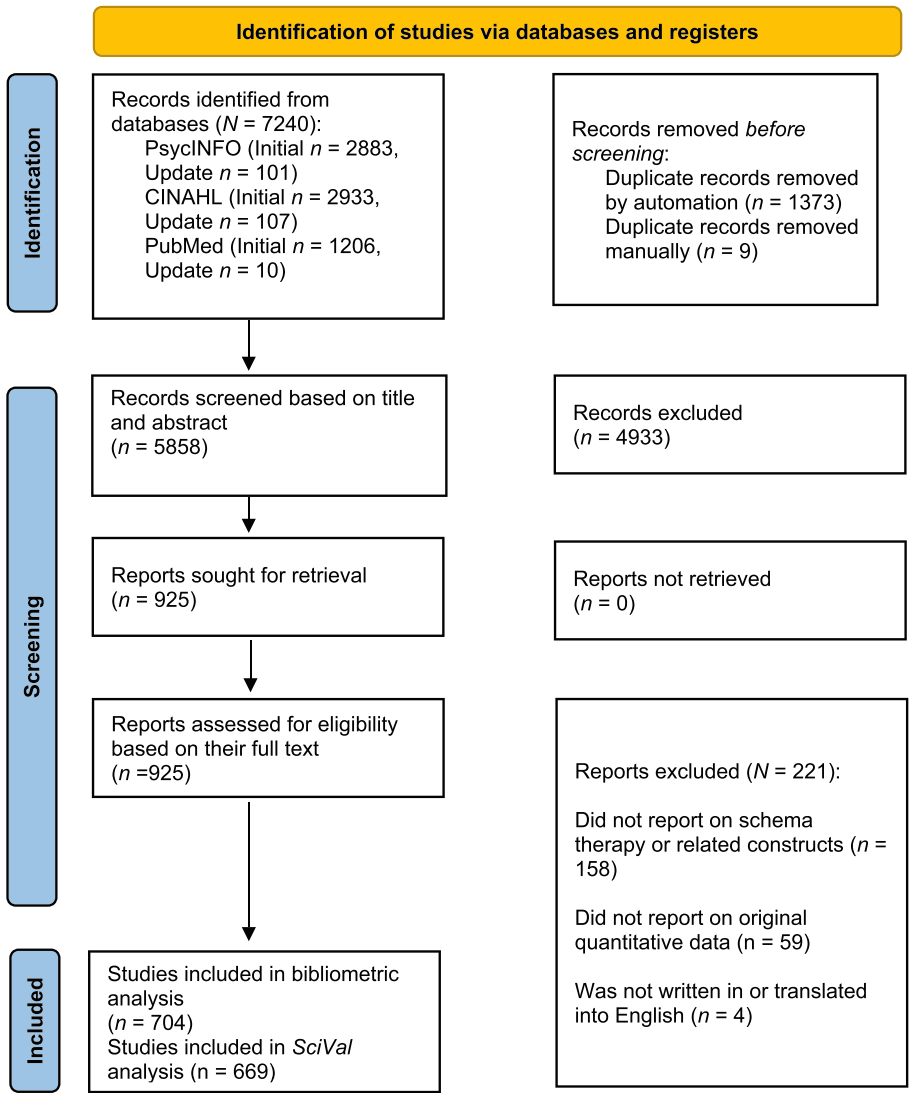
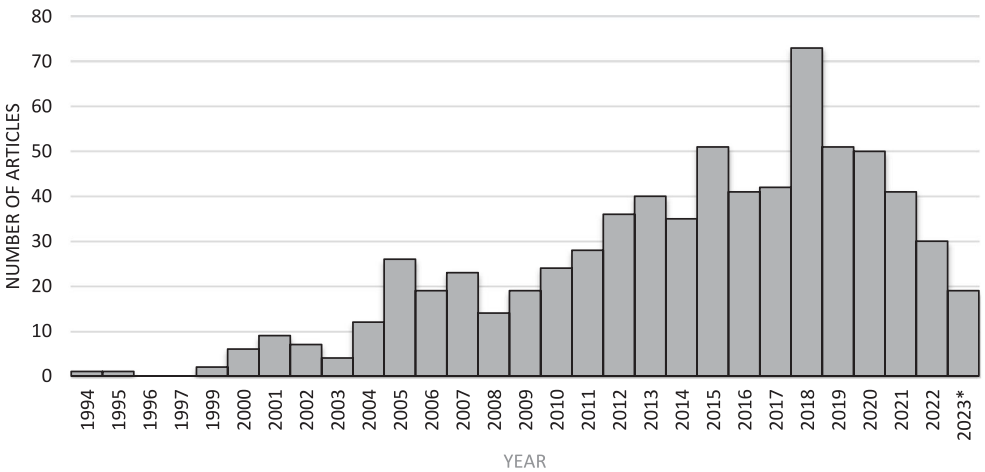


FIGURE 2 Quantitative peer-reviewed journal articles on schema therapy by year ($k = 704$). *2023 total incomplete as the literature search was completed in June 2023.



The articles were authored by 483 unique first authors from 37 countries. On average, there were four authors per study. Corresponding authors were primarily from the United States (14%), the United Kingdom (13%), the Netherlands (11%), Australia (9%) and Iran (7%).

6.2 | Sample characteristics

Table 3 summarizes the sample characteristics. Studies tended to recruit small samples (*Mdn N* = 153), and most participants were aged 18 years or older (87%). Most studies recruited females only or

TABLE 2 Top 10 journals where studies were most frequently published.

Journal	Articles	%	Journal quartile[a]	Five-year impact factor[b]
1. Clinical Psychology and Psychotherapy	42	7%	1	3.6
2. Cognitive Therapy and Research	36	6%	1	3.2
3. Journal of Behavior Therapy and Experimental Psychiatry	23	4%	2	2.3
4. Behavioural and Cognitive Psychotherapy	22	3%	2	2.2
5. Psychiatry Research	16	3%	1	6.2
6. Journal of Cognitive Psychotherapy	13	2%	4	0.9
7. Psychology and Psychotherapy: Theory, Research and Practice	13	2%	1	3.8
8. International Journal of Eating Disorders	12	2%	1	5.4
9. Journal of Personality Disorders	12	2%	2	2.6
10. Child Abuse and Neglect	11	2%	1	5.4

[a]*Scimago* analytics as of 14 August 2023.
[b]*Clarivate* Journal Citation reports as of 14 August 2023.

TABLE 3 Sample characteristics ($k = 704$).

Characteristic	Articles	%
Sample size		
Small (1 to 200 participants)	407	61%
Medium (200 to 499 participants)	164	24%
Large (500 to 999 participants)	83	12%
Very large (1000 + participants)	50	7%
Age		
Adults	615	87%
Adolescents	65	9%
Older adults	10	1%
Children	7	1%
Mixed	7	1%
Gender		
More than 60% female	449	64%
More than 60% male	104	15%
Gender balanced	140	20%
Not reported	11	2%
Sample type		
Clinical	396	56%
Forensic	31	4%
General population—community	158	22%
General population—university students	97	14%
Other	14	2%
Mixed	8	1%

samples comprising more than 60% females (64%). A total of 56% of studies recruited at least one clinical sample.

6.3 | Study design, schema therapy focus, context and outcomes

Table 4 summarizes the study designs, the aspect of schema therapy that was the primary focus of the article and the context or outcomes of each study. The most common study design was cross-sectional: 39% of articles used correlational designs, whilst 23% reported on group comparisons (e.g., a clinical group versus a group of healthy adults). A total of 16% of articles reported on evaluation studies (of these, 68% evaluated schema therapy, whilst 32% used schema therapy measures to evaluate another type of therapy, such as CBT). The evaluation studies used non-randomized trials (8%), RCTs (5%) and systematic case study (3%) designs.

More than half the studies focused on the 18 individual EMSs (52%), although several emphasized schema domains (19%). The effectiveness of schema therapy accounted for 11% of the articles. Schema modes were the focus of 7% of studies.

A total of 21 categories of study contexts and outcomes were identified. Contexts and outcomes examined by less than 1% of the articles were collapsed into a single category (other). Depression was the most studied aspect of mental health (22%), closely followed by personality disorders (20%), and anxiety disorders and symptoms (14%). Other constructs included childhood adversity (13%) and interpersonal outcomes (12%).

6.4 | Citations and authorship analysis

6.4.1 | Articles

Scopus data sourced via *SciVal* indicated that each article ($k = 669$) was cited an average of 27 times (total citations = 18,190). The average FWCI for any given article was 1.02. This indicates that articles were 2% above the global average of articles published in the field of psychology. The average number of views per publication was 50 (Field-Weighted Views Impact = 1.62), indicating that articles were viewed 62% higher than would be expected based on the global average for similar publications.

The 10 most highly cited quantitative schema therapy studies are summarized in Table 5. The most highly cited articles reported on RCTs on the effectiveness of schema therapy for personality disorders (Bamelis et al., 2014; Farrell et al., 2009; Giesen-Bloo et al., 2006),

TABLE 4 Study design, schema therapy focus and study context and outcomes ($k = 704$).

Characteristic	Articles	%
Study design		
Correlational[a]	275	39%
Comparison between clinical group/s and/or healthy controls	165	23%
Psychometric[a]	91	13%
Non-randomized trial of schema therapy	39	6%
Non-randomized trial of other interventions[b]	17	2%
RCT of schema therapy	20	3%
RCT of other interventions[b]	14	2%
Longitudinal	34	5%
Systematic case study	19	3%
Medical records	17	2%
Experimental	7	1%
Observational	4	1%
Other	1	<1%
Schema therapy focus		
Early maladaptive schemas	371	52%
Schema domains	134	19%
Schema therapy effectiveness	78	11%
Schema modes	50	7%
The effect of other treatments on schema therapy constructs	36	5%
Schema coping responses and styles	16	2%
Adaptive schemas	9	1%
Recalled parenting patterns assumed to result in schemas	5	1%
Other[c]	5	1%
Study context and outcomes[d]		
Mental health outcomes		
Depression and chronic depression	158	22%
Personality disorders—various	82	12%
Borderline personality disorder	45	6%
Antisocial personality disorder	5	1%
Narcissistic personality disorder	6	1%
Avoidant personality disorder	2	<1%
Schizotypal personality disorder	2	<1%
Anxiety disorders and symptoms	101	14%
Various psychiatric diagnoses and symptoms	85	12%
Eating disorders	73	10%
Substance use and addictions	62	9%
Suicide and self-harm	29	4%
PTSD and complex trauma	18	3%
Bipolar disorder	13	2%
Other		
Childhood adversity	89	13%
Interpersonal constructs including relational and parenting outcomes	84	12%
Anger, aggression or violence	49	7%
Emotion regulation including dissociation and alexithymia	42	6%
Adaptive outcomes, e.g., self-compassion happiness	40	6%

(Continues)

TABLE 4 (Continued)

Characteristic	Articles	%
Physical health and somatic symptoms	31	4%
Other	88	13%

Abbreviations: PTSD, post-traumatic stress disorder; RCT, Randomized Controlled Trial.
[a]Although psychometric studies are often single timepoint studies (i.e., correlational), we have included a separate category to identify those studies with a specific focus on the psychometric evaluation of measures.
[b]These studies evaluated a therapy other than schema therapy but included one or more schema therapy measures (e.g., the YSQ) as an outcome.
[c]This category included studies that focused on emotional or psychological needs, schema therapy training and schema therapy research priorities.
[d]Up to three constructs or populations were coded per article.

TABLE 5 The 10 most highly cited quantitative schema therapy studies.

Article title	Study design	Authors (year)	Citations
1. Outpatient psychotherapy for borderline personality disorder randomized trial of schema-focused therapy vs. transference-focused psychotherapy	RCT	Giesen-Bloo et al. (2006)	880
2. Childhood emotional maltreatment and later psychological distress among college students: The mediating role of maladaptive schemas	Longitudinal	Wright et al. (2009)	401
3. A schema-focused approach to group psychotherapy for outpatients with borderline personality disorder: A randomized controlled trial	RCT	Farrell et al. (2009)	277
4. Results of a multicentre randomized controlled trial of the clinical effectiveness of schema therapy for personality disorders	RCT	Bamelis et al. (2014)	258
5. The effectiveness of cognitive behavioural therapy for borderline personality disorder: Results from the borderline personality disorder study of cognitive therapy (BOSCOT) trial	RCT	Davidson et al. (2006)	228
6. The Schema Questionnaire - Short form: Factor analysis and relationship between schemas and symptoms	Psychometrics	Welburn et al. (2002)	200
7. Factor structure of the Schema Questionnaire in a large clinical sample	Psychometrics	Lee et al. (1999)	178
8. Psychometric properties of the long and short versions of the Young Schema Questionnaire: Core beliefs among bulimic and comparison women	Psychometrics	Waller et al. (2001)	176
9. Specificity in the relations among childhood adversity, early maladaptive schemas and symptom profiles in adolescent depression	Cross-sectional	Lumley et al. (2007)	148
10. Cognitive content among bulimic women: The role of core beliefs	Cross-sectional	Waller et al. (2000)	148

Note: Analysis completed via *SciVal* on 14 August 2023.
Abbreviation: RCT, Randomized Controlled Trial.

investigations of the etiological model underlying schema therapy (Lumley & Harkness, 2007; Wright et al., 2009), the reliability and validity of the YSQ (Young, 2003; Young & Brown, 2005) and its adaptations (Lee et al., 1999; Waller et al., 2001; Welburn et al., 2002) and EMSs in individuals with eating disorders (Waller et al., 2000). One article reported on an RCT for the effectiveness of CBT for BPD and assessed treatment effects on YSQ scores (Davidson et al., 2006).

6.4.2 | Authors

The authors with the greatest output (i.e., have published the highest number of quantitative studies on schema therapy) are listed in Table 6. This table outlines the number of articles in the current dataset authored by each researcher (fractionated and unfractionated), how many times their articles were cited and their average number of

TABLE 6 Authors with the greatest output of quantitative studies on schema therapy.

Name	Country	Articles	Fractional count[a]	Citations	Average citations per publication
1. Calvete, Esther	Spain	26	9.3	1013	39
2. Arntz, Arnoud	Netherlands	36	8.3	2520	70
3. Waller, Glenn	United Kingdom	24	7.5	1266	53
4. Shorey, Ryan	United States	21	6.1	376	18
5. Stuart, Gregory	United States	21	6.1	376	18
6. Anderson, Scott	United States	21	5.9	401	19
7. Orue, Izaskun	Spain	16	4.7	616	39
8. Meyer, Caroline	United Kingdom	15	4.0	785	52
9. Lobbestael, Jill	Netherlands	15	4.1	624	42
10. Bernstein, David	Netherlands	13	2.8	330	25

Note: Citations analysis completed 14 August 2023 via *SciVal*.
[a]The fractional count is based on assigning a fractional weight per article depending on the number of authors. For example, where the author was one of three co-authors, the article was counted as 1/3.

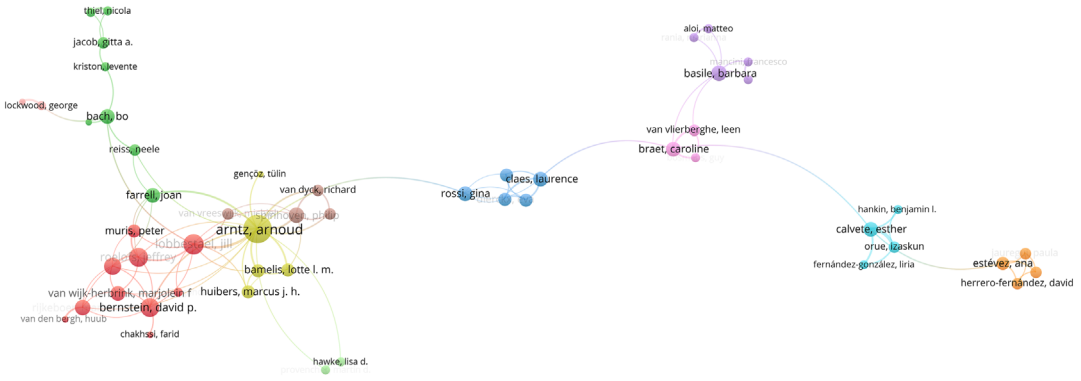


FIGURE 3 Co-authorship networks of authors of quantitative studies on schema therapy.

citations per article. The authors with the highest output reside in the Netherlands, the United States, Spain and the United Kingdom.

The authorship collaboration networks identified by *VosViewer* are presented in Figure 3. The co-authorship networks reflect that there are clusters of collaboration networks of authors centred around the authors Bach Bo (Denmark, green cluster), David Bernstein, Jeffrey Roelofs and Jill Lobbestael (Netherlands, red cluster), Arnoud Arntz (the Netherlands, yellow-green cluster), Richard Van Dyck (the Netherlands, brown cluster), Laurence Claes (Belgium, warm blue cluster), Caroline Braet (Belgium, pink cluster), Barbara Basile (Italy, purple cluster), Esther Calvete (Spain, cool blue cluster) and Ana Estévez (Spain, orange cluster). Lisa Hawke and Martin Provencher represented a two-person cluster (Canada, pale green cluster).

7 | DISCUSSION

The aim of this study was to examine the bibliometric characteristics of the quantitative schema therapy research published in English peer-reviewed journal articles since the inception of schema therapy. This analysis has enabled us to critically evaluate the schema therapy evidence base in several ways. First, an examination of the bibliometrics of the 704 included articles indicated that the literature has mostly been published in high-standing journals, often ranked in the top 25% of journals. However, the overall research output appears to have slowed in recent years. Second, an analysis of methodological characteristics identified that most studies have used correlational designs and recruited adult, mostly female, samples. Third, we applied a novel and nuanced coding framework of the topics and populations of focus and uncovered several important findings about the contexts in which schema has been investigated. Specifically, schema therapy has primarily been examined in relation to mental health problems (particularly depression and personality disorders), adverse childhood experiences (ACEs) and interpersonal outcomes. Fourth, evaluating the extent to which various aspects of the schema therapy model have received empirical attention revealed that more than two-thirds of the studies centred on EMSs and schema domains, whilst other key aspects of the model were under-studied: Schema modes were the focus of only 7% of studies, schema coping responses and styles were the focus of just 2% and emotional or psychological needs represented less than 1% of the research. Citation analyses revealed that

the schema therapy literature has been cited at a similar rate to other research but viewed 62% more often than similar publications in psychology. Finally, authorship analyses identified several clusters of key collaborators in the field. In the sections that follow, we discuss these findings in detail, highlight where they converge with the findings of the Delphi consensus study on the priorities for future schema therapy research (Pilkington et al., 2023) and outline the implications for research and practice.

The analysis of methodological aspects identified that studies tended to recruit well-sized samples. However, in terms of study design, only 5% were longitudinal. A reliance on cross-sectional data is common in the discipline of psychology, but the need for longitudinal and developmental studies may be particularly important in the context of schema therapy. A critical assumption in the schema therapy model is that EMSs form early in life. Clinically, the origins of EMSs are an important part of case formulation and treatment. The therapist identifies distressing and traumatic childhood memories that contributed to the development of the EMSs. These memories are then processed using imagery rescripting to weaken the corresponding EMS (Kip et al., 2023; Paulik et al., 2023). The notion that EMSs originate in childhood and that reconsolidation of these childhood memories is necessary for the individual to heal thus underpins the clinical practice of schema therapy. Indeed, psychotherapy has a long history of emphasizing the need to recall and reconsolidate disturbing memories to experience symptom relief (Lane et al., 2015). However, there is a paucity of research specifically linking early experiences and EMSs. The reliance on cross-sectional designs, coupled with the predominance of adult samples, means that currently little is known empirically about how EMSs develop. Developmental studies beginning in infancy and childhood are needed to gain empirical insights into the formation of EMSs early in life.

These findings converge with insights from the Delphi consensus study (Pilkington et al., 2023), which indicated that schema therapy researchers and clinicians perceive a need for developmental and longitudinal investigations into the theoretical assumptions underlying schema therapy, particularly the relationships between ACEs, EMSs and schema modes. In addition to developmental research focused on the development of EMSs in childhood, the field could benefit from longitudinal studies with adult participants. Studies of this nature could improve our understanding of how EMSs are influenced by contextual (e.g., life events and partner support) and individual difference factors (e.g., temperament) that may affect the activation and modification of EMSs across adulthood. Longitudinal studies could also enable the use of innovative analytic approaches, such as causal mediation analyses (CMA) (VanderWeele & Vansteelandt, 2014), to test causal assumptions inherent in the schema therapy model. For example, the application of CMA could facilitate the determination of the extent to which unmet core emotional needs influence the perpetuation of EMS and, in turn, influence the manifestation of mental health symptoms and disorders.

Furthermore, our bibliometric analysis did not evidence much in the way of experimental studies. Given that the schema therapy model assumes that EMSs are activated across a wide variety of contexts it may also be beneficial for the field to invest in the design and conduct of studies with an experimental focus. This would allow for various contextual factors to be manipulated to determine their effect on schema activation (e.g., Meneguzzo et al., 2020; Stopa & Waters, 2005).

Schema therapy was most frequently studied in the context of personality disorders and depression, whilst other mental health problems received less attention. Notably, more than two-thirds of RCTs on the effectiveness of schema therapy were conducted with adults with personality disorders. Given that the schema therapy model was developed in the context of working with chronic and resistant presentations, it is unsurprising that most of the research has focused on individuals with personality disorder diagnoses. However, in clinical practice, schema therapy is applied to a wide range of presentations and settings, from coaching healthy populations (McCormick, 2023) to working with forensic patients (Bernstein et al., 2012). Although EMSs and schema modes are transdiagnostic constructs that have clinical utility when working with various populations, clinicians should be cognizant of the varying support for schema therapy across different mental health outcomes.

It was surprising that only 3% of studies (across all study designs) focused on PTSD and complex trauma, given the developmental emphasis of schema therapy. Although complex trauma is not a diagnosis according to the Diagnostic Statistical Manual (DSM), it is highly relevant to the schema therapy model. Young et al. (2003) posited that mental health and relational problems in adulthood are underpinned by traumatic life experiences that challenge core emotional needs, such as significant others violating needs for stability and safety. The need for research with individuals with complex trauma was also highlighted by the Delphi study findings (Pilkington et al., 2023): The need for research on the effectiveness of schema therapy for complex trauma was the most highly rated priority for future research. The current findings showing the paucity of studies in this area, coupled with the findings of the Delphi study, suggest that complex trauma and PTSD are important topics for further investigation.

Our analysis revealed that certain foundational aspects of the theoretical model and clinical practice of schema therapy also warrant greater empirical attention. Notably, less than 1% of the literature focused on emotional or psychological needs in the context of schema therapy. This is surprising given that schema therapy is centred on the premise that unmet emotional needs predispose and perpetuate mental health and interpersonal problems. The primary goal of schema therapy is meeting the client's emotional needs and moderating or limiting dysfunctional modes or coping responses that thwart need satisfaction. When Young outlined the five core emotional needs more than 20 years ago, he noted that they were based on clinical observation and theory and encouraged the evaluation and refinement of the needs component of the model based on empirical investigations (Young et al., 2003; see page 9). Although there are several established models of psychological needs (e.g., Dweck, 2017; Ryan & Deci, 2017), needs in the context of schema therapy have received little research attention (e.g., Faustino & Vasco, 2020). In the absence of

an instrument to assess the core needs proposed by Young, research on this concept has been limited. Nonetheless, a recent position paper by a working group of international schema therapists and researchers (Arntz et al., 2021) included a comparative analysis of Dweck's (2017) theory of needs and Young's five needs. However, the paper's propositions were embedded in theory, without any accompanying empirical data. The need for further work on core emotional needs remains pertinent. This was also recognized as a priority by the international Delphi panel members (Pilkington et al., 2023).

Schema modes are valued as an organizing construct for understanding psychopathology and personality (Lazarus et al., 2020; Mącik, 2023). The clinical application of schema therapy centres on increasing awareness of modes and facilitating adaptive dialogues between modes. Indeed, modes have become such a central focus of treatment that several authors refer to 'schema mode therapy' (e.g., Bamber, 2004; Pugh, 2015). Nonetheless, schema modes were the focus of less than 10% of the existing quantitative studies on schema therapy. The empirical foundation for the schema mode concept is, at this point, minimal. Important propositions in the schema therapy model, such as the notion that clinical disorders can be differentiated by specific profiles or constellations of modes, currently lack an empirical foundation (Bär et al., 2023). The need for increased attention on schema modes is reflected in other commentaries (e.g., Lazarus et al., 2020) as well as the Delphi findings (Pilkington et al., 2023): Of the 19 research areas identified as priority, seven referenced modes. Specifically, panellists endorsed the need for research on modes in the context of ACEs, attachment theory, parenting styles and behaviours and evaluations of the effectiveness of schema therapy. For instance, it could be beneficial to investigate whether certain modes are more likely to manifest in individuals exposed to specific ACEs.

Relatedly, schema coping styles and responses were the focus of only 2% of studies. The absence of robust psychometrically-validated measures of coping styles may explain the lack of evidence in this area. Coping and psychological defence mechanisms have formed an important part of the broader discourse on psychopathology, personality and psychotherapy. However, in the absence of investigations into these core constructs in the specific context of schema therapy and clarity regarding how they overlap with related constructs, the basic science of the schema therapy model remains largely untested. The Delphi panellists (Pilkington et al., 2023) also perceived a need for clarification regarding the conceptual overlap between EMSs, coping styles, schema modes and constructs from attachment theory, such as attachment styles.

Finally, the citations and authorship analysis provided insights into the impact of the body of studies. The finding that schema therapy literature has been cited at a rate slightly higher than similar articles in the field of psychology, but viewed 50% more often, may reflect that schema therapy is an applied and relatively new approach. Re-evaluating these impact indicators in the future could provide insights into whether interest in schema therapy is growing, continuing or declining. The authorship and analyses revealed that the most prolific schema therapy researchers reside in the Netherlands, the United States, Spain and the United Kingdom. Collaboration networks were mostly clustered around geographical proximity, but some cross-country collaboration between these clusters was evident. Leveraging international collaboration is likely to be important to address time and resource-intensive research priorities identified by the Delphi panel (Pilkington et al., 2023), such as the need for multi-site RCTs. Furthermore, such research would facilitate cross-national and cross-cultural tests of the schema therapy model, thereby providing evidence on the aspects of the model that are universal and the aspects that require adaptation to ensure cultural sensitivity.

7.1 | Strengths and limitations

This study has several strengths, including the use of a systematic search approach that complied with PRISMA (Page et al., 2021). This contrasts with the typical search strategy used in bibliometric analyses, whereby a single database is searched, and no screening is completed. The application of a systematic search and screening process reduces the likelihood of relevant literature being omitted and irrelevant studies, duplicates and erroneous database entries being included. Another strength of the present study was our comprehensive coding of the context and outcomes based on reading the full texts. Bibliometric analyses typically rely on keyword analyses to capture study content. Although keyword analyses provide some general insights into the topics covered, keywords are brief, are inconsistently applied and do not allow for a more nuanced understanding of the specific contexts, constructs and populations being examined in the literature. Finally, 20% of the data were extracted by a second researcher with agreement exceeding 90%, increasing our confidence in the accuracy of the findings.

Nonetheless, this bibliometric analysis was subject to several limitations. Bias may have been introduced by restricting our analysis to peer-reviewed journal articles that were written in English. Resources to include non-English studies were unavailable but excluding these articles may have resulted in studies from Wealthy Educated Industrialized Rich and Democratic (WEIRD) countries being over-represented. A broader range of included study types could have enabled analysis of the levels of evidence available on schema therapy. For example, we excluded qualitative investigations, as the subjective and rich nature of qualitative findings is difficult to distil into the relatively course categories that a bibliometric analysis necessitates. A meta-synthesis may be an appropriate approach to mapping and evaluating the qualitative literature in the future. Further to this, it may be useful for future analyses to synthesize the systematic reviews and/or meta-analyses available on schema therapy, as these are the highest level of evidence available and determine whether interventions are included in clinical guidelines.

7.2 | Conclusion

In conclusion, this bibliometric analysis has provided a comprehensive investigation into the trends and characteristics of the quantitative

literature on schema therapy. We identified several critical research gaps in our understanding of several foundational schema therapy concepts. Areas of high priority for future research include schema modes and coping responses. More developmental and longitudinal studies are needed to evaluate several key causal assumptions in the theory underpinning schema therapy. Developmental research is needed to improve our understanding of the temporal relationships between childhood adversity, EMSs, coping styles, schema modes and psychopathology. Finally, longitudinal studies with adults can be used to examine how individual differences and contextual and situational factors interact to influence EMSs and schema mode activation. We hope that the illumination of these knowledge gaps, combined with the finding that the production of schema therapy research output has slowed in recent years, stimulates increased efforts in the field.

ACKNOWLEDGEMENTS

We thank Daniel Romano for his assistance with data coding. Open access publishing facilitated by Australian Catholic University, as part of the Wiley - Australian Catholic University agreement via the Council of Australian University Librarians.

CONFLICT OF INTEREST STATEMENT

None.

DATA AVAILABILITY STATEMENT

Not applicable (bibliometric analysis).

ETHICS APPROVAL STATEMENT

Not applicable (bibliometric analysis).

ORCID

Pamela D. Pilkington https://orcid.org/0000-0001-5852-3232
Gery C. Karantzas https://orcid.org/0000-0002-1503-2991

REFERENCES

Arntz, A., Jacob, G. A., Lee, C. W., Brand-de Wilde, O. M., Fassbinder, E., Harper, R. P., Lavender, A., Lockwood, G., Malogiannis, I. A., & Ruths, F. A. (2022). Effectiveness of predominantly group schema therapy and combined individual and group schema therapy for borderline personality disorder: A randomized clinical trial. *JAMA Psychiatry*, *79*(4), 287–299. https://doi.org/10.1001/jamapsychiatry.2022.0010

Arntz, A., Rijkeboer, M., Chan, E., Fassbinder, E., Karaosmanoglu, A., Lee, C. W., & Panzeri, M. (2021). Towards a reformulated theory underlying schema therapy: Position paper of an international workgroup. *Cognitive Therapy and Research*, *45*, 1–14.

Bach, B., Lockwood, G., & Young, J. E. (2018). A new look at the schema therapy model: Organization and role of early maladaptive schemas. *Cognitive Behaviour Therapy*, *47*(4), 328–349.

Bamber, M. (2004). 'The good, the bad and defenceless Jimmy'—A single case study of schema mode therapy. *Clinical Psychology & Psychotherapy*, *11*(6), 425–438. https://doi.org/10.1002/cpp.422

Bamelis, L. L., Evers, S. M., Spinhoven, P., & Arntz, A. (2014). Results of a multicenter randomized controlled trial of the clinical effectiveness of schema therapy for personality disorders. *American Journal of Psychiatry*, *171*(3), 305–322. https://doi.org/10.1176/appi.ajp.2013.12040518

Bär, A., Bär, H. E., Rijkeboer, M. M., & Lobbestael, J. (2023). Early maladaptive schemas and schema modes in clinical disorders: A systematic review. *Psychology and Psychotherapy: Theory, Research and Practice*, *96*(3), 716–747. https://doi.org/10.1111/papt.12465

Beck, A. T. (1964). Thinking and depression: II. Theory and therapy. *Archives of General Psychiatry*, *10*(6), 561–571. https://doi.org/10.1001/archpsyc.1964.01720240015003

Beck, A. T. (1991). Cognitive therapy: A 30-year retrospective. *American Psychologist*, *46*(4), 368–375. https://doi.org/10.1037//0003-066x.46.4.368

Beck, A. T. (1993). Cognitive therapy: Past, present, and future. *Journal of Consulting and Clinical Psychology*, *61*(2), 194–198. https://doi.org/10.1037/0022-006X.61.2.194

Bernstein, D. P., Nijman, H. L., Karos, K., Keulen-de Vos, M., de Vogel, V., & Lucker, T. P. (2012). Schema therapy for forensic patients with personality disorders: Design and preliminary findings of a multicenter randomized clinical trial in the Netherlands. *International Journal of Forensic Mental Health*, *11*(4), 312–324. https://doi.org/10.1080/14999013.2012.746757

Bishop, A., Younan, R., Low, J., & Pilkington, P. D. (2022). Early maladaptive schemas and depression in adulthood: A systematic review and meta-analysis. *Clinical Psychology & Psychotherapy*, *29*(1), 111–130. https://doi.org/10.1002/cpp.2630

Davidson, K., Norrie, J., Tyrer, P., Gumley, A., Tata, P., Murray, H., & Palmer, S. (2006). The effectiveness of cognitive behavior therapy for borderline personality disorder: Results from the borderline personality disorder study of cognitive therapy (BOSCOT) trial. *Journal of Personality Disorders*, *20*(5), 450–465. https://doi.org/10.1521/pedi.2006.20.5.450

Dweck, C. S. (2017). From needs to goals and representations: Foundations for a unified theory of motivation, personality, and development. *Psychological Review*, *124*(6), 689–719.

Farrell, J. M., Reiss, N., & Shaw, I. A. (2014). *The schema therapy clinician's guide: A complete resource for building and delivering individual, group, and integrated schema mode treatment programs*. John Wiley & Sons.

Farrell, J. M., Shaw, I. A., & Webber, M. A. (2009). A schema-focused approach to group psychotherapy for outpatients with borderline personality disorder: A randomized controlled trial. *Journal of Behavior Therapy and Experimental Psychiatry*, *40*(2), 317–328. https://doi.org/10.1016/j.jbtep.2009.01.002

Faustino, B., & Vasco, A. B. (2020). Early maladaptive schemas and cognitive fusion on the regulation of psychological needs. *Journal of Contemporary Psychotherapy*, *50*(2), 105–112. https://doi.org/10.1007/s10879-019-09446-3

Giesen-Bloo, J., van Dyck, R., Spinhoven, P., van Tilburg, W., Dirksen, C., van Asselt, T., Kremers, I., Nadort, M., & Arntz, A. (2006). Outpatient psychotherapy for borderline personality disorder: Randomized trial of schema-focused therapy vs transference-focused psychotherapy. *Archives of General Psychiatry*, *63*(6), 649–658. https://doi.org/10.1001/archpsyc.63.6.649

Hoffart Lunding, S., & Hoffart, A. (2016). Perceived parental bonding, early maladaptive schemas and outcome in schema therapy of cluster c personality problems. *Clinical Psychology & Psychotherapy*, *23*(2), 107–117. https://doi.org/10.1002/cpp.1938

Janovsky, T., Rock, A. J., Thorsteinsson, E. B., Clark, G. I., & Murray, C. V. (2020). The relationship between early maladaptive schemas and interpersonal problems: A meta-analytic review. *Clinical Psychology & Psychotherapy*, *27*(3), 408–447. https://doi.org/10.1002/cpp.2439

Karantzas, G. C., Younan, R., & Pilkington, P. D. (2022). The associations between early maladaptive schemas and adult attachment styles: A meta-analysis. *Clinical Psychology: Science and Practice*, *30*(1), 1–20. https://doi.org/10.1037/cps0000108

Kip, A., Schoppe, L., Arntz, A., & Morina, N. (2023). Efficacy of imagery rescripting in treating mental disorders associated with aversive memories—An updated meta-analysis. *Journal of Anxiety Disorders*, *99*, 102772. https://doi.org/10.1016/j.janxdis.2023.102772

Kopf-Beck, J., Müller, C. L., Tamm, J., Fietz, J., Rek, N., Just, L., Spock, Z. I., Weweck, K., Takano, K., & Rein, M. (2024). Effectiveness of schema therapy versus cognitive behavioral therapy versus supportive therapy for depression in inpatient and day clinic settings: A randomized clinical trial. *Psychotherapy and Psychosomatics*, 1–12.

Lane, R. D., Ryan, L., Nadel, L., & Greenberg, L. (2015). Memory reconsolidation, emotional arousal, and the process of change in psychotherapy: New insights from brain science. *Behavioral and Brain Sciences*, *38*, e1. https://doi.org/10.1017/S0140525X14000041

Lazarus, G., & Rafaeli, E. (2021). Modes: Cohesive personality states and their inter-relationships as organizing concepts in psychopathology. *Journal of Psychopathology and Clinical Science*, *132*(3), 238–248. https://doi.org/10.1037/abn0000699

Lazarus, G., Sened, H., & Rafaeli, E. (2020). Subjectifying the personality state: Theoretical underpinnings and an empirical example. *European Journal of Personality*, *34*(6), 1017–1036. https://doi.org/10.1002/per.2278

Lee, C. W., Taylor, G., & Dunn, J. (1999). Factor structure of the Schema Questionnaire in a large clinical sample. *Cognitive Therapy and Research*, *23*, 441–451.

Lobbestael, J., van Vreeswijk, M., Spinhoven, P., Schouten, E., & Arntz, A. (2010). Reliability and validity of the short Schema Mode Inventory (SMI). *Behavioural and Cognitive Psychotherapy*, *38*(4), 437–458. https://doi.org/10.1017/S1352465810000226

Lumley, M. N., & Harkness, K. L. (2007). Specificity in the relations among childhood adversity, early maladaptive schemas, and symptom profiles in adolescent depression. *Cognitive Therapy and Research*, *31*, 639–657. https://doi.org/10.1007/s10608-006-9100-3

Mącik, D. (2023). Are the schema modes suitable for explaining borderline and narcissistic behaviours? *Current Psychology*, Early online access, *1-10*, 3070–3079. https://doi.org/10.1007/s12144-023-04552-x

Maher, A., Cason, L., Huckstepp, T., Stallman, H., Kannis-Dymand, L., Millear, P., Mason, J., Wood, A., & Allen, A. (2022). Early maladaptive schemas in eating disorders: A systematic review. *European Eating Disorders Review*, *30*(1), 3–22. https://doi.org/10.1002/erv.2866

Masley, S. A., Gillanders, D. T., Simpson, S. G., & Taylor, M. A. (2012). A systematic review of the evidence base for Schema Therapy. *Cognitive Behaviour Therapy*, *41*(3), 185–202. https://doi.org/10.1080/16506073.2011.614274

McCormick, I. (2023). An introduction to schema coaching techniques, part 1: The schema octagon. *The Coaching Psychologist*, *19*(1), 27–32. https://doi.org/10.53841/bpstcp.2023.19.1.26

Meneguzzo, P., Collantoni, E., Bonello, E., Busetto, P., Tenconi, E., & Favaro, A. (2020). The predictive value of the early maladaptive schemas in social situations in anorexia nervosa. *European Eating Disorders Review*, *28*(3), 318–331.

Ouzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan: A web and mobile app for systematic reviews. *Systematic Reviews*, *5*(1), 1–10. https://doi.org/10.1186/s13643-016-0384-4

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, *372*, n71. https://doi.org/10.1136/bmj.n71

Paulik, G., Van Velzen, L. S., Lee, C. W., Markulev, C., Jackson Simpson, J., Davies, P., Bendall, S., & Schmaal, L. (2023). Urgent call for research into imagery rescripting to reduce suicidal mental imagery: Clinical research considerations. *Australian Psychologist*, Early online access, *1-9*, 15–23. https://doi.org/10.1080/00050067.2023.2241608

Peeters, N., van Passel, B., & Krans, J. (2021). The effectiveness of schema therapy for patients with anxiety disorders, OCD, or PTSD: A systematic review and research agenda. *British Journal of Clinical Psychology*, *61*(3), 579–597. https://doi.org/10.1111/bjc.12324

Pilkington, P. D., Bishop, A., & Younan, R. (2021). Adverse childhood experiences and early maladaptive schemas in adulthood: A systematic review and meta-analysis. *Clinical Psychology & Psychotherapy*, *28*(3), 569–584. https://doi.org/10.1002/cpp.2533

Pilkington, P. D., Younan, R., & Karantzas, G. C. (2023). Identifying the research priorities for schema therapy: A Delphi consensus study. *Clinical Psychology & Psychotherapy*, *30*(2), 344–356. https://doi.org/10.1002/cpp.2800

Pugh, M. (2015). A narrative review of schemas and schema therapy outcomes in the eating disorders. *Clinical Psychology Review*, *39*, 30–41. https://doi.org/10.1016/j.cpr.2015.04.003

Rek, K., Kappelmann, N., Zimmermann, J., Rein, M., Egli, S., & Kopf-Beck, J. (2023). Evaluating the role of maladaptive personality traits in schema therapy and cognitive behavioural therapy for depression. *Psychological Medicine*, *53*(10), 4405–4414.

Renner, F., DeRubeis, R., Arntz, A., Peeters, F., Lobbestael, J., & Huibers, M. J. (2018). Exploring mechanisms of change in schema therapy for chronic depression. *Journal of Behavior Therapy and Experimental Psychiatry*, *58*, 97–105.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford publications.

Simpson, S. G., Pietrabissa, G., Rossi, A., Seychell, T., Manzoni, G. M., Munro, C., Nesci, J. B., & Castelnuovo, G. (2018). Factorial structure and preliminary validation of the schema mode inventory for eating disorders (SMI-ED). *Frontiers in Psychology*, *24*(9), 1–17. https://doi.org/10.3389/fpsyg.2018.00600

Stopa, L., & Waters, A. (2005). The effect of mood on responses to the Young Schema Questionnaire: Short form. *Psychology and Psychotherapy: Theory, Research and Practice*, *78*(1), 45–57.

Taylor, C. D. J., Bee, P., & Haddock, G. (2017). Does schema therapy change schemas and symptoms? A systematic review across mental health disorders. *Psychology and Psychotherapy*, *90*(3), 456–479. https://doi.org/10.1111/papt.12112

Thimm, J. C. (2022). The higher-order structure of early maladaptive schemas: A meta-analytical approach. *Frontiers in Psychiatry*, *13*, 1053927.

van Eck, N., & Waltman, L. (2023). *VOSviewer 1.6.19*.

VanderWeele, T., & Vansteelandt, S. (2014). Mediation analysis with multiple mediators. *Epidemiological Methods*, *2*(1), 95–115. https://doi.org/10.1515/em-2012-0010

Waller, G., Meyer, C., & Ohanian, V. (2001). Psychometric properties of the long and short versions of the Young Schema Questionnaire: Core beliefs among bulimic and comparison women. *Cognitive Therapy and Research*, *25*(2), 137–147. https://doi.org/10.1023/A:1026487018110

Waller, G., Ohanian, V., Meyer, C., & Osman, S. (2000). Cognitive content among bulimic women: The role of core beliefs. *International Journal of Eating Disorders*, *28*(2), 235–241. https://doi.org/10.1002/1098-108x(200009)28:2<235::aid-eat15>3.0.co;2-1

Welburn, K., Coristine, M., Dagg, P., Pontefract, A., & Jordan, S. (2002). The Schema Questionnaire—Short Form: Factor analysis and relationship between schemas and symptoms. *Cognitive Therapy and Research*, *26*, 530–591. https://doi.org/10.1023/A:1016231902020

Wright, M. O. D., Crawford, E., & Del Castillo, D. (2009). Childhood emotional maltreatment and later psychological distress among college students: the mediating role of maladaptive schemas. *Child Abuse & Neglect*, *33*(1), 59–68. https://doi.org/10.1016/j.chiabu.2008.12.007

Yakın, D., Grasman, R., & Arntz, A. (2020). Schema modes as a common mechanism of change in personality pathology and functioning:

Results from a randomized controlled trial. *Behaviour Research and Therapy*, *126*, 103553.

Young, J. (1994). *Young–Rygh Avoidance Inventory*. Cognitive Therapy Center of New York.

Young, J. (2003). *Young Schema Questionnaire—Long Form 3*. Schema Therapy Institute.

Young, J., Klosko, J., & Weishaar, M. (2003). *Schema therapy: A practitioner's guide*. Guilford Press.

Young, J. E. (1999). *Cognitive therapy for personality disorders: A schema-focused approach*. Professional Resource Press/Professional Resource Exchange.

Young, J. E., & Brown, G. (2005). Young Schema Questionnaire—Short Form Version 3. *Psychological Assessment*. https://doi.org/10.1037/t67023-000

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Pilkington, P. D., & Karantzas, G. C. (2024). A bibliometric analysis of the quantitative schema therapy literature. *Clinical Psychology & Psychotherapy*, *31*(2), e2963. https://doi.org/10.1002/cpp.2963