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**The effectiveness of family constellation therapy in improving
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Abstract

Family/systemic constellation therapy is a short-term group intervention aiming to help clients better understand and then change their conflictive experiences within a social system (e.g., family). The aim of the present systematic review was to synthesize the empirical evidence on the tolerability and effectiveness of this intervention in improving mental health. The PsycINFO, Embase, MEDLINE, ISI Web of Science, Psycindex, PsycEXTRA, ProQuest Dissertations & Theses, The Cochrane Library, Google Scholar, and an intervention-specific organization's databases were searched for quantitative, prospective studies published in English, German, Spanish, French, Dutch, or Hungarian up until April 2020. Out of 4,197 identified records, 67 were assessed for eligibility, with 12 studies fulfilling inclusion criteria (10 independent samples; altogether 568 participants). Outcome variables were diverse ranging from positive self-image through psychopathology to perceived quality of family relationships. Out of the 12 studies, 9 showed statistically significant improvement post-intervention. The studies showing no significant treatment benefit were of lower methodological quality. The random-effect meta-analysis – conducted on 5 studies in relation to general psychopathology – indicated a moderate effect (Hedges' g of 0.531, CI: 0.387–0.676). Authors of 7 studies also investigated potential iatrogenic effects and 4 studies reported minor or moderate negative effects in a small proportion (5-8%) of participants that potentially could have been linked to the intervention. The data accumulated to date point into the direction that family constellation therapy is an effective intervention with significant mental health benefits in the general population; however, the quantity and overall quality of the evidence is low.

Keywords: family constellation, mental health, psychopathology, effectiveness, systematic review

Introduction

Family / systemic constellation therapy is a short-term group intervention aiming to help clients gain insights into and then change their inner image of a conflictual system and finally change their behavior in relation to that same system (Hunger, Bornhäuser, Link, Schweitzer, & Weinhold, 2014). The system addressed is most often the family but alternatively other systems (e.g., workplace community, ego parts, victim-perpetrator dyads) can also be the target of the intervention (in consideration of the tradition in clinical practice, the term ‘family constellation therapy’ is used throughout the manuscript in this broader sense, also referring to therapeutic work with systems other than the family). This form of therapy was developed in Germany in the early ‘90s integrating elements of – among others – psychodrama, family sculptures, contextual therapy, and certain South-African aboriginal traditions (Butollo, Franke, & Hellinger, 2017; D. B. Cohen, 2006; McQuillin & Welford, 2013; Stiefel, Harris, & Zollmann, 2002; Stones, 2006; Weber, 1993).

The intervention is typically administered in a group setting in which approximately 15-25 unrelated participants (i.e., participants are not members of the same system) meet for a one-time, 2-3-day, facilitator-led seminar/workshop. Each constellation starts with a brief interview between the facilitator and active client to clarify the individual’s goal with the intervention. This is followed by a joint decision about which members of the client’s system play an important role in the issue presented and these are represented by other group members during the constellation (Orban, 2008). The representatives (including the client’s representative) are positioned in the room by the client initially, with spatial distances, angles, and body postures meant to correspond to the client’s inner image of the system (“problem constellation”). This allows the facilitator to identify the dynamics beneath the client’s presenting concern, while at the same time helps the client reflect on their internal experience from a more objective, partially external point of view (as they are observers and not participants at this point). This part of the process is non-verbal, focusing on what participants begin to experience as being part of the structure created by the active client. Next, the representatives are asked by the therapist about their physical sensations, feelings, and thoughts they had while in their positions. Rearrangements, spatial adjustments, and brief, ritualized conversations are made based on the principles of healthy functioning within a system (Hellinger, 1994; Weber, 1993) until a constellation is identified that offers a resolution for

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the active participant's issue. Ideally this "solution constellation" provides a new framework for the client to feel, think, and behave in the given system (Hunger, Weinhold, Bornhäuser, Link, & Schweitzer, 2015).

Family constellation therapy has become particularly popular in Europe and South America (even becoming a part of the public health care system in certain countries; Franco de Sá, Nogueira, & De Almeida Guerra, 2019; Krüger & Schmidt-Michel, 2003; Mahr & Brömer, 2008) and is rapidly expanding in North America and Asia as well (Choi & Oh, 2018; North American Systemic Constellations, 2019a, 2019b; Pritzker & Duncan, 2019). Thousands of practitioners around the world use this method (D. B. Cohen, 2006) and with the German professional association 'Deutsche Gesellschaft für Systemaufstellungen' alone, more than 450 professionals are registered currently. Compared to its widespread use by therapists of various theoretical and professional backgrounds, little effort has been made to generate and critically evaluate empirical data regarding the effectiveness of the intervention.

Family constellation therapy has been adjusted and delivered to a large variety of client groups ranging from the general population (Broughton, 2006) through prisoners (D. B. Cohen, 2009) to different patient groups (e.g., Hausner, 2015; Jafferany et al., 2019; Nazarkiewicz & Bourquin, 2017; Ramos & Ramos, 2019). However, the number of studies using empirical methods to formally investigate the effectiveness or mechanisms of action of family constellation therapy is small and dominated by qualitative (Chu, 2008; Franke, 1996; Georgiadou, 2012; Häuser, Klein, & Schmidt-Keller, 1998; Junge, 1998) or mixed methods (Laireiter & Mitterhuemer, 2011; Mahr & Brömer, 2008; Rieger & Stückemann, 1999) studies investigating clients' satisfaction with the intervention. Despite the often rapid and significant positive changes family constellation therapy can produce in participants (Langlotz, 2005), there has been some concern among health care professionals regarding the safety of this therapeutic approach (e.g., no professional follow-up after the one-time workshop, which might be emotionally upsetting for some participants; Nelles, 2005; Reuter, 2005; Schneider, 2010; Talarczyk, 2011).

For the above reasons, synthesizing and critically evaluating the available empirical data regarding the effectiveness and tolerability of family constellation therapy is of high public health importance not just in North America but also globally. To date, two systematic reviews have been conducted on this intervention. Neither of them focused specifically on quantitative data regarding mental health outcomes and they did not emphasize data on tolerability/safety of the intervention

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either. Further, the first review (Weinhold & Reinhard, 2014) summarized the research evidence up to early 2012, while several high-quality studies have been published since then. In addition, this review has been published as a book chapter written in German and is not available online – significantly limiting accessibility for a broader audience. Although the second review is more recent and was published in English, it was restricted to English language, peer-reviewed papers, which approach resulted in identifying merely 3 empirical studies to synthesize (Hurley, Koenning, & Bray, 2018). Therefore, the goal of this study was to systematically review the empirical evidence regarding family constellation therapy 1) focusing on quantitative data related to mental health outcomes, 2) considering all the evidence accumulated to date, 3) considering languages other than English as well, and 4) paying adequate attention to information related to tolerability/safety.

Methods

The protocol of the present systematic review was registered in the International Prospective Register of Systematic Reviews (PROSPERO) September 19, 2018 (# CRD42018109124). Given the preliminary stage of empirical research on family constellation therapy and the strong emphasis on locating all available evidence – including the gray literature – in the present study, the author team was not able to predict at the time of registration if enough data on the same mental health outcome would be reported. As a consequence, the study protocol included a narrative synthesis only; finally however, a meta-analysis on non-diagnosis-specific psychopathology – the single variable considered by a large enough number of studies – was also conducted.

Eligibility criteria

Studies included in the review met the following criteria: (1) quantitative studies with a longitudinal study design (including at least 2 assessment points, at least one of which was occurring before- and at least one of which was occurring after the intervention¹) (2) that evaluated the efficacy/effectiveness of family/systemic constellations on outcome measures of mental

¹ For instance, a study on goal attainment was excluded as it investigated the main variables of interest only at the 2-week and 4-month follow-up, while at baseline only qualitative data were collected about the participants' goals regarding the intervention (Bornhäuser & Wolff, 2014).

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health. Given the limited amount of empirical data, any indicators of mental health (e.g., well-being, social functioning, psychopathology etc.) were considered as eligible outcome variables and no restrictions were made on participant populations either (e.g., general population, psychiatric in- or outpatients).

Exclusion criteria were: 1) studies without a precisely defined outcome, 2) qualitative and case studies, 3) no description of study methodology or assessment tool, 4) no available full text, and 5) study language other than English, German, Spanish, French, Dutch, or Hungarian. In the case of mixed method studies (combination of qualitative and quantitative approaches), the quantitative portion of the study was considered.

Search strategy and screening

To include both peer-reviewed and the gray literature as well, an extensive literature search was conducted including the following databases: PsycINFO, Embase, MEDLINE, ISI Web of Science, Psynindex, PsycEXTRA, ProQuest Dissertations & Theses, the Cochrane Library, and Google Scholar. Considering the date of introduction of family/systemic constellations into the clinical practice, the search was limited to studies published after the 1st of January 1993. The electronic data base searches were completed initially on 8th August 2018 and updated on the 6th of April 2020 and considered scientific works published in 6 languages (English, German, Spanish, French, Dutch, and Hungarian). The search terms included ‘Family Constellation(s)’, ‘Systemic Constellation(s)’, ‘System Constellation(s)’ and ‘Structural Constellation(s)’ as well as their grammatical variations and equivalents in the other five languages (the detailed list of search terms can be found in Supplementary Table 1). To reduce the number of irrelevant hits (‘family constellation’ is a common general term referring to the structure of a family), terms were searched in the title of the publications in the case of Google Scholar; while in the rest of the data bases, both the title and abstract was searched for the search terms.

In addition to traditional scientific databases, the database of the German Society of Systemic Constellations (Deutsche Gesellschaft für Systemaufstellungen; DGfS), the largest professional body devoted to the study and practice of the intervention, was also added to the pool of records to screen. Reference list of included studies and studies citing the included studies in Google Scholar were also screened for additional, potentially relevant records. The screening process – based on title and/or abstract – was completed by different members of the author team

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depending on the language of the record (one assessor per item). Eligibility – based on (German or English language) full text – was assessed by the lead author, experienced in conducting systematic reviews and having content expertise specific to the research and clinical applications of the intervention.

Data extraction

Data extraction for all variables (including methodological quality) and for each eligible study was completed by two independent researchers (both with former experience in conducting systematic reviews) and discrepancies were resolved by reaching consensus. As part of the data extraction process, the following variables were considered: publication type (peer reviewed journal article, book / book chapter, thesis / dissertation, non-peer reviewed journal article, online report), study design, sample size, country of study, type of sample (e.g., normal population vs. psychiatric outpatients), sex composition (all male, all female or mixed; if mixed, percentage of female participants), and age of respondents.

The data extraction also specified detailed methodological characteristics including information regarding the control group (no-, convenience-, matched-, or randomized control group), length of intervention, length of follow-up, training level and professional background of intervention provider based on description in the article or personal website (e.g., psychiatrist with several decades of experience with family constellation therapy, social worker novice in family constellation therapy), intervention setting (private or public health care), outcome variables (construct and assessment technique), and main results. A second, simplified variable to describe overall results was also created with 2 response categories: statistically significant improvements reported or not. Finally, data were also extracted on whether study authors assessed iatrogenic effects (negative side effects not assessed, assessed and not found, assessed and found).

Study quality was assessed in a standardized way by the 2018 version of the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018). The advantage of this rating tool is that it provides the opportunity to evaluate studies with different designs (i.e., qualitative-, quantitative randomized controlled-, quantitative non-randomized-, quantitative descriptive-, and mixed-methods studies). Each study is assessed according to two screening questions (identical across study types) and 5 design-specific items. An ad hoc supplementary question was also added to the MMAT to evaluate the quality of statistics as this aspect is not covered in the MMAT. Quality of

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statistical analysis and data presentation was considered as appropriate if study authors 1) used adequate statistical tests considering the research question and type of data, 2) reported detailed results (value of test statistics, p value) of the statistical tests, and 3) reported effect size indicators as well.

A summary score (ranging from 0 to 8) was also created to facilitate the comparison of studies in terms of overall methodological quality regardless of their designs. This summary score was calculated as the simple sum of the 2 screening and 5 design-specific items of the MMAT plus the item on quality of statistics (adequate methodological characteristics on the given area coded as 1, while inadequate methodological characteristics quantified as 0).

If effect size indicators were not reported but the published descriptive data allowed the authors of the present study to calculate those, then the results of these calculations were added to the report with a reference to the fact that these data were not part of the original publication but calculated based on those. Where both effect size indicators and descriptive data allowing the calculation of those were missing (altogether or for certain subgroups), three attempts were made to gather the raw data from study authors. This effort was successful in two cases (Krüger & Schmidt-Michel, 2003; Langlotz, 2006) and unsuccessful in another two cases (Höppner, 2006; Sethi, 2009).

As a rule of thumb, we considered 0.2 as a threshold for small effect, 0.5 for moderate effect, and 0.8 for large effect in case of Cohen's d ; and 0.01 as a threshold for small effect, 0.06 for moderate effect, and 0.14 for large effect in case of η^2 ; while the corresponding thresholds for r were 0.1, 0.3 and 0.5, respectively (J. Cohen, 1988). Finally, a formal statistical analysis (Mann-Whitney test) was also conducted to examine if overall methodological quality (using the summary score) was independent of the reported effectiveness of the intervention (using the simple study conclusion variable: significant positive effects were reported or not). Effect size r was calculated using the following formula: z/\sqrt{n} . The software Statistical Package for the Social Sciences, Version 25 (IBM SPSS, 2017) was used for the analysis.

Quantitative synthesis (meta-analysis)

The most frequently reported outcome indicator in the included studies was an omnibus (not diagnosis-specific) indicator of psychopathology; therefore, a meta-analysis was performed on the five studies that evaluated the effectiveness of family constellation therapy in this regard. As

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different assessment tools (Global Severity Index of the SCL-90-R, Personality Assessment Inventory, Positive and Negative Symptom Scale, and Outcome Questionnaire 45.2) and so scale ranges were used in these studies, standardized difference in means (Hedges' g) was used as the effect size indicator. Where follow-up data from several assessment points were reported (Langlotz, 2006; Weinhold et al., 2013), all data points were considered when computing the effect size (for raw data entered into the analysis and time-point-level effect sizes, please see Supplementary file 'Raw meta-analysis data'). The intent of this analysis was to provide results generalizable to comparable populations; and therefore, the random-effects model was employed for the analysis. Given the significant differences across study designs, a subgroup analysis was also performed using a dichotomous (controlled vs. non-controlled) study design variable as a moderator.

Heterogeneity in effect sizes across studies was assessed with the Q and the I^2 statistic. The Q statistic provides a test of the null hypothesis that all studies in the analysis share a common effect size. If all studies shared the same effect size, the expected value of Q would be equal to the degrees of freedom. The I^2 statistic provides a percentile estimate for the proportion of variance in observed effects attributable to variance in true effects rather than sampling error.

Finally, two interval estimates were also calculated. In addition to the confidence interval for the overall effect size (i.e., precision of the estimate), the prediction interval was also calculated (based on τ as an estimate of the standard deviation of the true effect sizes) to estimate the true effect size for the universe of populations represented by the studies included in the analyses. The likelihood of publication bias was not analyzed as the low number of studies ($n=5$) did not make such analyses plausible. The software Comprehensive Meta-Analysis, version 3 (CMA 3; Biostat Inc., 2016) was used for these analyses.

Results

Qualitative synthesis

Background and intervention data. The traditional database search identified 1,790 records resulting in 1,283 records after deduplication. Database of the German Society of Systemic Constellations contained 2,914 entries resulting in a total of 4,197 records to screen. At this stage, 4,130 records were excluded due to being unrelated to the target intervention or not containing

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empirical data, resulting in 67 records to assess for eligibility. Based on the evaluation of the full texts, further 55 studies were excluded (Figure 1).

Altogether, 12 studies met inclusion criteria representing 10 independent samples (3 papers analyzed the same sample) with a total sample size of 568. Bibliographical data and reason for exclusion for the 44 studies passing screening stage but failing to satisfy eligibility criteria are available as supplementary material to this article. The vast majority of included studies were conducted in Germany, while a single study was conducted in Australia, South Africa, and the UK each. All but one study employed a mixed sample of men and women (mean percentage of women=75.8%), with the exception of the study by Langlotz (2005) where information on the participants' gender was not reported. Most studies (n=5) were published as peer-reviewed journal articles or theses/dissertations (n=3); however, 2 books and 2 online reports were also among the included studies. The intervention was most often delivered in the format of a 2- or 3-day single workshop, with two exceptions, where shorter (1 to 4 hour) workshops were held on a repeated basis. More detailed description of the previously listed and additional variables (exact ratio of women in the sample, age characteristics, exact length of follow-up time, training background of intervention provider, and private vs. public setting of intervention delivery) are described in the original data extraction tool published as online supplementary material to this article.

Methodological data. Most studies (n=7) had a single group, pre-post design, two studies used a non-randomized controlled design, and two additional studies employed a randomized controlled design (one of them reported in 2 papers). The post-intervention follow-up time ranged from 0 (no follow-up after post-intervention assessment) to 12 months (M=16.8 weeks, SD=19.0 weeks). Inadequacy of methodological rigor was most frequent in relation to a lack of attempt to control for confounders and conducting/reporting statistical analyses (e.g., no effect size indicators). Methodological evaluation of each included study is reported in Table 2.

Outcome data. Most important characteristics of the study samples, the outcome variables and the main results are summarized in Table 3. The included studies considered a large variety of outcome variables ranging from indicators of overall psychological wellbeing and self-efficacy through interpersonal relationships (mainly with a focus on family relationships) to psychopathology (e.g., depression, overall psychopathology level). Out of the twelve studies included, authors of nine studies reported statistically significant treatment benefits in connection to participation in family constellation therapy with largely variable effect sizes (Table 3).

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The analysis examining the relationship between methodological quality and study outcome indicated that those studies that reported statistically significant treatment benefits ($M_{methodology\ total\ score}=6.11\pm 0.17$) were of significantly higher methodological quality (Mann-Whitney $U=3.00$, $p=0.041$) than those not reporting significant, positive intervention outcomes ($M_{methodology\ total\ score}=4.33\pm 0.58$). The magnitude of the difference was large ($r=0.59$).

Safety / tolerability. The small majority of studies ($n=7$) also explicitly investigated iatrogenic effects emerging either attributed to the intervention by participants or merely occurring during the follow-up time. Out of these 7 studies, authors of four studies reported minor or moderate negative effects in a small proportion (5-8%) of participants that theoretically could have been linked to participation in the intervention.

Langlotz (2005) described that some participants of the study reported becoming emotionally upset, confused or exhausted during / immediately after the intervention, which these participants considered as a necessary element of the intervention process. This author also reported on intervention participants whose psychopathology scores increased significantly immediately after the intervention (at the end of the 2-day workshop), but even in these cases, at follow-up, scores decreased well below baseline scores. In another study, Langlotz (2006) reported that out of the 21 intervention participants, 1 individual (4.8%) showed clinically significant elevation in psychopathology scores immediately after the intervention. In this case, no follow-up interview was conducted to clarify if the deterioration could have been linked to the intervention or external factors (e.g., negative life event during the time of the workshop).

In Höppner's study, all participants were offered the opportunity to contact a therapist on the phone should they feel that the intervention destabilized them (Höppner, 2006). The author reported that out of the 81 participants², four individuals used this opportunity, three of whom only wished to further elaborate on their interpretation of the intervention, while one participant (1.2%) reported a drastic worsening in relation to an interpersonal relationship. The same author also reported that according to the 5-month follow-up questionnaire, 4 individuals (5.0%) reported a deterioration in the subjective, overall evaluation of their condition.

² The original sample consisted of 81 individuals. In Table 3 and 4, 70 is reported as sample size as this is the number of participants about whom the author displayed enough data to allow the calculation of effect sizes.

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Finally, in a study of 48 participants, 4 individuals (8.3%) reported negative outcomes or side effects such as short-term, negative physical symptoms (n=1), intimate relationship break-up (n=1), increased loneliness in the family (n=1), and workplace bullying (n=1), which respondents linked to their participation in the intervention (Rieger & Stückemann, 1999).

Quantitative synthesis of data on psychopathology

The meta-analytic investigations resulted in a Hedges' g of 0.53 (Table 4) indicating that on average, psychopathological symptom scores of those who participated in the intervention decreased 0.53 standard deviation (moderately strong effect) compared to their pre-intervention scores or the control group – depending on study design. The confidence interval for the effect size ranged from 0.39 to 0.68 and the Z -value was 7.20 with a corresponding p -value of <0.001 suggesting that the null hypothesis – i.e. that the effect size would be zero – is to be rejected.

The Q -value was 2.79 with 4 degrees of freedom and a corresponding p -value of 0.595. Thus, the observed dispersion was actually less than what would be expected by chance suggesting that there is no evidence that the true effect size varies from study to study. The I^2 statistic was 0% indicating that none of the variance in observed effects reflects variance in true effects but that all of it is due to sampling error. The variance of true effects in log units (τ^2) was <0.001 and the standard deviation of true effects in log units (τ) was <0.001 indicating that the between-study variance is estimated as zero. The 95% prediction interval for the overall effect size was 0.296 to 0.753 indicating that in the universe of populations represented by the studies included in the current analyses, the true effect size in 95% of cases would fall somewhere in this range.

The subgroup analysis indicated that the pooled effect size of studies with a controlled design ($g=0.50$, $CI=0.23-0.76$) was not statistically different ($Q=0.105$, $p=0.746$) from that of studies with an uncontrolled design ($g=0.55$, $CI=0.37-0.72$), indicating that the mean effect size is in the moderate range both for studies with controlled and non-controlled designs.

Discussion

Intervention effectiveness

The goal of this study was to systematically gather and synthesize the quantitative evidence regarding the effectiveness of family constellation therapy in terms of mental health outcomes.

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Based on the results of this review, we can conclude that the quantity and overall quality of the evidence is low, the latter mainly due to the frequently lacking control group and the typically short follow-up period. Most likely, not independently from these facts, the majority of the evidence has been published in outlets other than peer-reviewed journals. Importantly though, the explorative analysis examining the relationship between methodological quality and study outcomes indicated that those studies that reported treatment benefits were of higher methodological quality suggesting that the evidence may be more convincing if additional higher quality studies will be published.

Out of the 12 studies included in the present review, 9 showed significant treatment benefits post-intervention. The outcome variables selected by study authors were quite diverse, which is not surprising considering the major role current (Weissman, Markowitz, & Klerman, 2008) or the internal representation of early (Young, Klosko, & Weishaar, 2003) interpersonal relationships play in our bio-psycho-social health. The studies showing no significant treatment benefit reported comparable effect sizes to those reported in the studies showing statistically significant treatment benefit, suggesting that the former studies were underpowered (had too low sample sizes to detect existing treatment effects).

The results of the meta-analysis on indices of general psychopathology from 5 studies with comparable outcomes indicated a moderately strong treatment effect – independently of the controlled (n=2) or uncontrolled (n=3) nature of the study design. The variance of effect sizes across studies was estimated to be zero, which is most likely an underestimate due to the low number of studies included; most likely, the impact of this treatment also varies by population. However, the present findings suggest that the variation in effects is minor; indicating that the impact of the treatment for all comparable populations (self-selected participants from the general population) falls close to the mean effect size reported here.

In summary, data from the included quantitative, prospective studies suggest that family constellation therapy is a consistently and moderately effective intervention in the general population to decrease psychopathological symptoms. These findings are parallel to the results of retrospective effectiveness studies, which also indicated treatment benefit. For instance, in a study of 57 Austrian respondents, approximately 2/3rd of participants reported increased happiness, courage, optimism, and coping abilities as a result of the intervention (Jost, 2007), while in a study of participants from Germany, 92% of the respondents reported that the intervention was helpful

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for them (Mraz, 2006). In a retrospective study of English-, French- and Russian speaking participants, 87% of those who sought treatment for interpersonal difficulties (n=119) reported that their problems resolved as the outcome of the intervention, while the same value in the case of mental health issues (n=31) was 90% (Thomas, 2010). A study of 209 Hungarian participants reported that out of 26 quality of life domains covered in the evaluation, participants experienced statistically significant improvement in 23 areas after the intervention (Zseni et al., 2011). An interesting aspect of this study was the investigation of the effect of problem severity, with analyses indicating that the intervention was more effective among individuals with less severe mental health or interpersonal relationship challenges (the same was reported by Höppner, 2006). Finally, authors of a study – examining a sample of 139 inpatient substance use treatment participants from Germany – reported that intervention participants completed the entire treatment regime with a significantly higher likelihood (81%) than those who did not participate (50%) in family constellation therapy (Mahr & Brömer, 2008).

Tolerability / safety

Considering theoretical concerns (Deutsche Gesellschaft für Systemische Therapie und Familientherapie, 2003; Talarczyk, 2011) and anecdotic data on the risks of family constellation therapy (Langlotz, 1998b, 2001), a major focus of our work was to summarize data on tolerability. Altogether, authors of four studies reported minor or moderate negative effects in a small proportion (5-8%) of participants that theoretically could have been linked to participation in the intervention [Jost (2007) reported similar proportions (3.4%) in their retrospective study].

The non-intended effects / correlating events reported included ruptures in interpersonal relationships, short-term somatic or mental health symptoms, or unfavorable change in other problem areas the participants worked on during the intervention. The studies reviewed here suggest that the often strong emotional responses family constellation therapy can generate in a very condensed time frame can facilitate improvement but can also temporarily destabilize individuals with less stable mental health status. This aspect of the results points towards the importance of post-intervention screening and providing intervention participants with the opportunity to receive professional mental health support to process their experience if needed (Langlotz, 2005). It is also worthy of mentioning that in all of the studies where iatrogenic effects were studied, the intervention provider was a psychologist or psychiatrist and also an expert in

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family constellation therapy (for details, see original data extraction tool published as online supplementary material to this article). This leaves the question open, whether iatrogenic effects are more prevalent or severe if the intervention is provided by less experienced / trained professionals, an issue which deserves attention in future studies.

Strengths and limitations

A major strength of the present systematic review is the comprehensive search process including a large number of data bases and six languages. In addition, this is the first study using meta-analytic techniques in an attempt to quantitatively summarize outcome data in relation to family constellation therapy. Further, two researchers independently assessed each included study contributing to a higher reliability of the data extraction process. Finally, the review is based on an a priori developed and publicly registered research protocol.

Despite these strengths, a number of limitations should be acknowledged as well. First, both the electronic searches, the screening process and checking for eligibility criteria was completed by one researcher only decreasing the reliability of these processes. Most importantly, due to the often lacking controlled design, the possibility cannot be ruled out that the reported beneficial changes are the results of external factors and not the intervention itself. However, as studies with controlled designs indicated effect sizes similar to the combined effect of the meta-analysis in relation to psychopathology, and as studies with numerous assessment points indicated improvement right after the intervention (Langlotz, 2006) but not between the pre-intervention assessment points (Höppner, 2006), it is plausible to assume that the results are truly indicative of the effectiveness of family constellation therapy.

The overall low number of studies included (and the even lower number of peer-reviewed publications among them) also limits the reliability of the findings. This is especially true for the meta-analytic investigations, where it was not feasible to conduct an important aspect of meta-analyses due to the low number of studies: the estimation of publication bias. It is worthy of mentioning though that even with the Cochrane collaboration, the median number of studies included into a systematic review is 3 (Davey, Turner, Clarke, & Higgins, 2011). Therefore, while we are aware that the reliability of the findings is suboptimal due to the low amount of evidence available, we argue that synthesizing these data is helpful and necessary to at least preliminarily inform clinical practice and inspire further research.

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A further limitation of the present review is the lack of distinction made among subtypes of family/systemic constellations: interventions provided in the studies reported on in this review were considered as a homogenous, single type of intervention as empirical studies most often do not specify the subtype of the intervention they investigated. However, there are numerous subtypes (Langlotz, 2010; Nelles, 2007) and formats of delivery (e.g., 2-day single workshop vs. repeated, few-hour sessions over the course of several weeks) for this form of group therapy and their effectiveness might vary.

Future directions

Future authors interested in studying the effectiveness of family constellation therapy are encouraged to replicate the previous findings in adequately powered investigations employing controlled (preferably randomized controlled) designs and several intervention providers simultaneously to allow the explicit examination of therapist effects. Studies with longer follow-up time (6 months or more) could significantly contribute to our knowledge regarding the stability of treatment benefits. In view of the ongoing debate on the safety of the intervention, further studies with an explicit focus on tolerability could help us better understand in which populations and under which conditions (e.g., therapist's training background, length of debriefing, accessibility of support post-intervention) can the intervention be delivered in a safe manner.

Considering the ongoing diversification within family constellation therapy, authors of future studies are also encouraged to specify the mode of delivery and subtype of family/systemic constellations they employ when reporting on the effectiveness of the intervention. In addition, synthesizing the relatively large number of qualitative studies we have identified through our searches (Fig 1; for detailed bibliographic data of these records, see Supplementary file 'Excluded items') could also contribute to a better understanding of the effectiveness and treatment mechanisms of family constellation therapy.

Finally, there is a huge gap between the theory and anecdotic evidence versus the solid research data related to the application of family constellation therapy for a large variety of specific mental disorders. Authors have described the use of this form of brief group therapy with clients struggling with psychosomatic- (Baitinger, 1999; Elsner & Kölle, 2010; Hausner, 2015), eating- (Bourquin, 2011), mood- (Asztalos, Angster, & Pusztai, 2011; Brink, 1998; Ramos & Ramos, 2019), anxiety- (Essen, 1998; Franke, 1996), substance use- (Döring-Meijer & Hellinger, 2000;

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Gemeinhardt, 2006; Ingwersen, 2000; Mahr & Brömer, 2008), trauma-related (Assel, 2009; Nazarkiewicz & Bourquin, 2017; Ruppert, 2006) and even psychotic disorders (Hellinger, 2001; Langlotz, 1998a; Ruppert, 2004; Weber & Drexler, 2002), while quantitative empirical research to date has almost exclusively focused on samples from the general population. Therefore, there is a clear need to formally investigate the efficacy / effectiveness and safety / tolerability of the intervention in specific client / patient populations to better understand to whom family constellation therapy can be beneficial on their journey toward recovery or simply a happier and more fulfilling life.

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Table 1. Methodological characteristics of the studies included

| Study | Design | MMAT | MMAT | MMAT | MMAT | MMAT | MMAT | MMAT | Statistics | Total score |
|-------------------------------|---|------|------|------|------|------|------|------|------------|-------------|
| | | S1 | S2 | 1 | 2 | 3 | 4 | 5 | | |
| Geils & Edwards, 2018 | single group, pre-post | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 5 |
| Goode, 2015 | randomized-controlled trial | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 4 |
| Höppner, 2006 | two-group, non-randomized crossover | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 6 |
| Hunger et al., 2014† | randomized-controlled trial | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7 |
| Hunger et al., 2015† | single group, pre-post | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7 |
| Krüger & Schmidt-Michel, 2003 | two-group, matched control group design | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 7 |
| Langlotz, 2005 | single group, pre-post | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 5 |
| Langlotz, 2006 | single group, pre-post | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 4 |

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| | | | | | | | | | | |
|---------------------------|-----------------------------|---|---|---|---|---|---|---|---|---|
| Rieger & Stückemann, 1999 | single group, pre-post | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7 |
| Schumacher, 2000 | single group, pre-post | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 5 |
| Sethi, 2009 | single group, pre-post | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 4 |
| Weinhold et al., 2013† | randomized-controlled trial | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 7 |

† Marked studies are based on the same/partially overlapping sample

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Table 2. Sample characteristics, outcome variables, and main results of the studies included

| Study | Sample | Outcome variables (assessment tools) | Results | Treatment benefit |
|-----------------------|---|--|--|----------------------|
| Geils & Edwards, 2018 | General population (n=8), South Africa | Self-perceived intuition (Types of Intuition Scale) | No change in intuition scores ($p=0.06$; $d=0.30$) [considering the magnitude of the effect size and the tendency toward significance, this is most likely the result of insufficient statistical power] | No |
| Goode, 2015 | Nursing students (n=75), United Kingdom | Fear of death (Multidimensional Fear of Death Scale) | No change in fear of death in either the intervention ($p=0.189$, $d=0.42$) or the no-intervention control group ($p=0.810$, $d=0.08$), improvement in the control group with fear-of-death-specific intervention ($p=0.002$, $d=0.96$) | No |
| Höppner, 2006 | General population (n=70), Germany | Psychopathology (SCL-90-R's global wellness index); positive self-image (Frankfurter Selbstkonzeptskalen); self-acceptance (Skala zur Erfassung der Selbstakzeptierung); general mental health (Skalen zur Psychischen | Improvement in all but one target areas in the intervention group: Psychopathology: $p<0.001$, $d=0.46$; positive self-image: $p<0.001$, $d=0.37$; general mental health: $p<0.001$, $d=0.24$; self-acceptance: $p<0.001$, $d=0.35$; self-doubt: $p<0.001$, $d=0.38$; general self-efficacy: $p=0.005$, $d=0.23$, external control beliefs: $p=0.268$, $d=0.09$, sense of coherence: $p<0.001$, $d=0.26$. No change in the control group (T1 vs. T3) in any areas. Psychopathology: $p=0.313$, $r=0.30$; positive self-image: $p=0.213$, $r=0.38$; general mental health: $p=0.625$, $r=0.15$; | Yes |

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| Study | Sample | Outcome variables (assessment tools) | Results | Treat- ment benefit |
|----------------------|---|--|--|---------------------------|
| | | Gesundheit); self-doubt (Unsicherheitsfragebogen); general self-efficacy and external control beliefs (Fragebogen zu Kompetenz- und Kontrollüberzeugungen), sense of coherence (Fragebogen zur Lebensorientierung) | self-acceptance: $p=0.092$, $r=0.51$; self-doubt: $p=0.202$, $r=0.39$; general self-efficacy: $p=0.590$, $r=0.16$; external control beliefs: $p=0.798$, $r=0.08$; sense of coherence: $p=0.878$, $r=0.05$. Improvement in 3 areas in the control group after receiving intervention ($n=11$). Psychopathology: $p=0.008$, $r=0.81$; positive self-image: $p=0.022$, $r=0.69$; general mental health: $p=0.074$, $r=0.54$; self-acceptance: $p=0.028$, $r=0.66$; self-doubt: $p=0.173$, $r=0.41$; general self-efficacy: $p=0.358$, $r=0.28$; external control beliefs: $p=0.444$, $r=0.23$; sense of coherence: $p=0.721$, $r=0.11$ | |
| Hunger et al., 2014† | General population ($n=208$), Germany | Perceived quality of personal social system (Experience in Social Systems Questionnaire, the Interpersonal Problematic Relations scale of the Outcome Questionnaire and the | Larger improvement in the intervention group than in the control group in all but one assessed target areas: belonging (T2: $p=0.021$, $d=0.32$; T3: $p=0.075$, $d=0.27$), autonomy (T2: $p<0.001$, $d=0.62$; T3: $p<0.001$, $d=0.61$), accord (T2: $p<0.001$, $d=0.59$; T3: $p=0.001$, $d=0.50$), confidence (T2: $p<0.001$, $d=0.54$; T3: $p=0.031$, $d=0.38$), experience in social systems altogether (T2: $p<0.001$, $d=0.61$; T3: $p<0.001$, $d=0.53$); interpersonal problematic relations (T2: $p=0.035$, | Yes |

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| Study | Sample | Outcome variables (assessment tools) | Results | Treatment benefit |
|----------------------|-------------------------------------|---|--|----------------------|
| Hunger et al., 2015† | General population (n=104), Germany | Interpersonal Problems scale of the Tool for the Evaluation of the Psychotherapeutic Progress) Overall psychological functioning (Outcome Questionnaire); overall psychological distress (Questionnaire for the Evaluation of Treatment Progress); goal attainment (Incongruence Questionnaire); perceived quality of personal social system (personal domain of the | $d=0.32$; T3: $p=0.021$, $d=0.36$); interpersonal problems (T2: $p=0.003$, $d=0.45$; T3: $p<.001$, $d=0.53$) Improvement in all four areas: overall psychological functioning (T2: $p<0.001$, $d=0.41$; T3: $p<0.001$, $d=0.49$); overall psychological distress (T2: $p<0.001$, $d=0.39$; T3: $p=0.001$, $d=0.50$); goal attainment (T2: $p<0.001$, $d=0.35$; T3: $p<0.001$, $d=0.44$); perceived quality of personal social system (T2: $p<0.001$, $d=0.61$; T3: $p<0.001$, $d=0.57$). Clinical significance: depending on the indicator, reliable positive change in 33-35% of participants at 8-month follow-up (T2) and 33-40% at 12-month follow-up (T3) | Yes |

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| Study | Sample | Outcome variables (assessment tools) | Results | Treat- ment benefit |
|---|--|---|---|---------------------------|
| | | Experience In Social Systems Questionnaire) | | |
| Krüger & Schmidt- Michel, 2003 | Psychiatric outpatients with a history of psychiatric hospitalization (<i>n</i> =20), Germany | Psychopathology (Positive and Negative Syndrome Scale; PANSS) | Decrease in psychopathology scores in the intervention group (<i>p</i> = 0.016 , <i>d</i> = 0.71), while no significant decrease in symptom scores in the control group (<i>p</i> = 0.083 , <i>d</i> = 0.43). No significant time x group interaction (<i>p</i> = 0.239 , η^2 = 0.076) most likely due to low statistical power (cf. width of confidence interval for this study in the meta-analysis, supplementary file 2) | Yes |
| Langlotz, 2005 | General population (<i>n</i> =35), Germany | Psychopathology (Personality Assessment Inventory) | Reduction in all 6 psychopathology domain scores: anxiety (<i>p</i> <.001, <i>d</i> = 0.82), depression (<i>p</i> <.001, <i>d</i> = 0.69), paranoia (<i>p</i> <.001, <i>d</i> = 0.34), schizophrenia (<i>p</i> <.001, <i>d</i> = 0.60), borderline features (<i>p</i> <.001, <i>d</i> = 0.84), suicidal ideation (<i>p</i> <.001, <i>d</i> = 0.49) | Yes |
| Langlotz, 2006 | Individuals with at least two SCL-90R scales showing elevated values | Psychopathology (SCL- 90-R: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, | Decrease on psychopathology indicators at all 3 follow up assessment points with the exception of phobic anxiety at T4: somatization (T2: <i>p</i> = 0.013 , <i>d</i> = 0.57 ; T3: <i>p</i> = 0.001 , <i>d</i> = 0.54 ; T4: <i>p</i> = 0.004 , <i>d</i> = 0.59), obsessive-compulsive (T2: <i>p</i> < 0.001 , <i>d</i> = 0.95 ; T3: <i>p</i> = 0.001 , <i>d</i> = 0.84 ; T4: <i>p</i> = 0.001 , <i>d</i> = 0.87), | Yes |

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| Study | Sample | Outcome variables (assessment tools) | Results | Treat- ment benefit |
|---------------------------|---|---|--|---------------------------|
| | (<i>n</i> =21), Germany | hostility, phobic anxiety, paranoid ideation, psychoticism, global wellness index, positive symptom distress index, and positive symptom total) | interpersonal sensitivity (T2: <i>p</i> =0.001, <i>d</i> =0.84; T3: <i>p</i> <0.001, <i>d</i> =0.93; T4: <i>p</i> =0.001, <i>d</i> =0.86), depression (T2: <i>p</i> <0.001, <i>d</i> =1.02; T3: <i>p</i> =0.004, <i>d</i> =0.77; T4: <i>p</i> =0.002, <i>d</i> =0.80), anxiety (T2: <i>p</i> =0.010, <i>d</i> =0.74; T3: <i>p</i> =0.006, <i>d</i> =0.63; T4: <i>p</i> =0.001, <i>d</i> =0.89), hostility (T2: <i>p</i> =0.004, <i>d</i> =0.98; T3: <i>p</i> =0.005, <i>d</i> =0.79; T4: <i>p</i> =0.001, <i>d</i> =0.89), phobic anxiety (T2: <i>p</i> =0.014, <i>d</i> =0.43; T3: <i>p</i> =0.038, <i>d</i> =0.43; T4: <i>p</i> =0.139, <i>d</i> =0.33), paranoid ideation (T2: <i>p</i> =0.004, <i>d</i> =0.76; T3: <i>p</i> =0.002, <i>d</i> =0.66; T4: <i>p</i> =0.001, <i>d</i> =0.73), psychoticism (T2: <i>p</i> =0.001, <i>d</i> =0.88; T3: <i>p</i> =0.001, <i>d</i> =0.87; T4: <i>p</i> =0.001, <i>d</i> =0.83), global wellness index (T2: <i>p</i> =0.001, <i>d</i> =1.00; T3: <i>p</i> <0.001, <i>d</i> =0.97; T4: <i>p</i> =0.001, <i>d</i> =0.96), positive symptom distress index (T2: <i>p</i> <0.001, <i>d</i> =1.14; T3: <i>p</i> =0.001, <i>d</i> =0.73; T4: <i>p</i> <0.001, <i>d</i> =0.95), and positive symptom total (T2: <i>p</i> =0.004, <i>d</i> =0.71; T3: <i>p</i> =0.001, <i>d</i> =0.81; T4: <i>p</i> =0.001, <i>d</i> =0.84) | |
| Rieger & Stückemann, 1999 | General population (<i>n</i> =48), Germany | Fatigue, depression, anger, vigor (Profile of Mood States), perceived quality of family | Improvement in perceived relationship with mother (autonomy: <i>p</i> <0.001, η =.64; attachment: <i>p</i> =0.003, η =.52), no change in perceived relationship with father (autonomy: <i>p</i> =.335, <i>d</i> =0.21; attachment: <i>p</i> =0.101, <i>d</i> =0.29), mixed results | Yes |

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| Study | Sample | Outcome variables (assessment tools) | Results | Treat- ment benefit |
|------------------|--|---|---|---------------------------|
| | | relationships in terms of attachment and autonomy (Subjektives Familienbild Fragebogen) | regarding perceived relationship with spouse (autonomy: $p=0.043$, $\eta=.49$; attachment: $p=0.416$, $\eta=.52$), mixed results regarding perceived relationship with first child (autonomy: $p=.008$, $\eta=.78$; attachment: $p>0.999$, $d<0.01$); no change in perceived relationship with 2 nd child (autonomy: $p=.455$, $d=0.14$; attachment: $p=0.881$, $d=0.02$). Improvement in relation to fatigue ($p=0.004$, $d=0.91$), depression ($p=0.002$, $d=0.99$), vigor ($p=0.008$; $d=0.55$); no change in anger ($p=0.224$, $r=0.18$) | |
| Schumacher, 2000 | General population ($n=53$), Germany | Perceived quality of family relationships in terms of attachment and autonomy (Subjektives Familienbild Fragebogen) | Improvement in perceived family relationships in terms of autonomy (T2: $p=0.006$, $d=.28$; T3: $p<0.001$, $d=.51$) and attachment (T2: $p=0.001$, $d=.44$; T3: $p=0.020$, $d=.32$) | Yes |
| Sethi, 200 | General population ($n=30$), Australia | Perceived quality of family relationships and wellbeing; both assessed | Improvement on both target areas between pre- and post-intervention; however, formal statistical analyses of these changes were not conducted and not enough descriptive data were provided to allow the calculation of effect size | No |

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| Study | Sample | Outcome variables (assessment tools) | Results | Treat- ment benefit |
|---------------------------------------|---|--|--|---------------------------|
| | | through ad hoc questions | | |
| Weinhold et al., 2013 [†] | General population (<i>n</i> =208), Germany | Psychological functioning (Outcome Questionnaire 45.2), distress (Questionnaire for the Evaluation of Treatment Progress), motivational incongruence (Incongruence Questionnaire) | Larger improvement in the intervention group than in the control group on all three target areas: psychological functioning (T2: <i>p</i> =0.003, <i>d</i> =0.45; T3: <i>p</i> =0.003, <i>d</i> =0.46), distress (T2: <i>p</i> <0.001, <i>d</i> =0.51; T3: <i>p</i> =0.001, <i>d</i> =0.51), motivational incongruence (T3: <i>p</i> <0.001, <i>d</i> =0.55; T3: <i>p</i> <0.001, <i>d</i> =0.52) | Yes |

[†] Marked studies are based on the same/partially overlapping sample

Values in bold are calculated by the review authors based on raw data reported in the original article or provided by the authors of the original studies (Dr. Krüger and Dr. Langlotz).

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Table 4. Results of the meta-analysis investigating the effectiveness of family constellation therapy on overall psychopathology

| Group by Design | Study name | Time point | Statistics for each study | | | | | | |
|-----------------|--------------------------------|------------|---------------------------|----------------|----------|-------------|-------------|---------|---------|
| | | | Hedges's g | Standard error | Variance | Lower limit | Upper limit | Z-Value | p-Value |
| Controlled | Krüger, 2003 (PANSS) | Blank | 0.531 | 0.445 | 0.198 | -0.341 | 1.404 | 1.194 | 0.233 |
| Controlled | Weinhold, 2013 (OQ-45.2) | Combined | 0.491 | 0.140 | 0.020 | 0.216 | 0.766 | 3.502 | 0.000 |
| Controlled | | | 0.495 | 0.134 | 0.018 | 0.233 | 0.757 | 3.699 | 0.000 |
| Non-controlled | Höppner, 2006 (SCL90-R / GSI) | Blank | 0.451 | 0.114 | 0.013 | 0.227 | 0.675 | 3.946 | 0.000 |
| Non-controlled | Langlotz, 2005 (PAI) | Blank | 0.602 | 0.167 | 0.028 | 0.275 | 0.929 | 3.605 | 0.000 |
| Non-controlled | Langlotz, 2006 (SCL90-R / GSI) | Combined | 0.893 | 0.254 | 0.064 | 0.395 | 1.390 | 3.519 | 0.000 |
| Non-controlled | | | 0.547 | 0.088 | 0.008 | 0.374 | 0.720 | 6.187 | 0.000 |
| Overall | | | 0.531 | 0.074 | 0.005 | 0.387 | 0.676 | 7.202 | 0.000 |

PANSS: Positive and Negative Syndrome Scale; PAI: Personality Assessment Inventory; SCL90-R / GSI: Global Severity Index of the Symptom Checklist-90-R; OQ-45.2: Outcome Questionnaire 45.2

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Figure 1. Overview (flow chart) of the study selection process

