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A Meta-Analysis of Psychosocial Outcomes and Moderating Factors**

^aVermeulen-Oskam, E., ^bFranklin, C., ^cvan 't Hof, L. P. M., ^cStams, G. J. J. M.,
^cvan Vugt, E. S., ^cAssink, M., ^cVeltman, E. J., ^dFroerer, A. S., ^eStaaks, J. P. C., ^fZhang, A.

^aMental Care Group, Mentaal Beter

^bSteve Hicks School of Social Work, The University of Texas at Austin, Austin, USA

^cUniversity of Amsterdam, Research Institute of Child Development and Education,
Amsterdam, The Netherlands

^dThe Solution Focused Universe, Keller, TX, USA

^eUniversity of Amsterdam, University Library, Amsterdam, The Netherlands

^fSchool of Social Work, The University of Michigan, Ann Arbor, USA

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Corresponding concerning this article can be addressed to: E. Vermeulen-Oskam, Mental Care Group, Mentaal Beter Hoofdkantoor, Steijnlaan 12, 1217 JS Hilversum, The Netherlands. E-mail: e.vermeulen.oskam@gmail.com

Abstract

Purpose. Solution Focused Brief Therapy (SFBT) focuses on the strengths and resources of clients, and is assumed to achieve positive results on various psychosocial outcomes. This meta-analysis is an extension of previous meta-analyses on SFBT, and examines if the effectiveness of SFBT is influenced by participant, intervention, study and publication characteristics. **Methods.** Experimental and quasi-experimental studies were included. A three-level meta-analysis was performed on 72 studies and 489 effect sizes, accounting for within and between study differences. **Results.** The overall effect of SFBT on psychosocial problems was large ($g = 1.17$). Moderator analyses revealed larger effects of SFBT in non-clinical samples ($g = 1.50$) than in clinical samples ($g = 0.78$). Studies with treatment-as-usual (TAU) as control condition reported smaller effects ($g = 0.58$) than studies with a no-treatment control condition ($g = 1.59$). Relatively large effects were found for couples ($g = 3.02$) compared to other client groups ($0.41 < g < 1.70$), and marital functioning ($g = 3.02$) compared to other outcomes ($0.23 < g < 1.31$). Group therapy ($g = 1.64$) yielded a larger effect than individual therapy ($g = 0.48$). **Conclusion.** The findings indicate that SFBT is applicable for a variety of clients and psychosocial problems.

Keywords: solution-focused brief therapy, SFBT, psychosocial problems, outcomes, effectiveness, meta-analysis

Introduction

Approximately one in eight people in the world is affected by mental health problems such as depression, anxiety, and substance use disorders (WHO, 2022) and experience a variety of psychosocial problems. Unfortunately, there is a shortage of mental health professionals to provide treatment (WHO, 2021; WHO, 2022). This is alarming given that people with mental health problems have higher rates of disability and mortality (WHO, 2021). Additionally, there are enormous economic consequences of mental health problems due to productivity losses and other indirect costs to society that surpass health care costs (WHO, 2022). It is therefore important to identify interventions that can be used across a range of mental disorders, which are low cost and effective in the short term. Solution-focused brief therapy (SFBT) may be one such intervention. SFBT is a brief, strengths-based, mental health intervention with origins in systemic, brief family therapies.

The origins of SFBT can be traced to the early Mental Research Institute's (MRI) brief therapy approach. The developers Steve de Shazer and Insoo Kim Berg were two social workers who were trained at the MRI institute and proceeded to work with an Interdisciplinary team of therapists and researchers to develop SFBT during the late 1970s - early 1980s while they worked in an outpatient and training clinic, the Brief Family Therapy Center) in Milwaukee, Wisconsin, USA (Gingerich & Peterson, 2013). The SFBT developers made use of clinical observations behind a oneway mirror, case studies, program evaluations, and qualitative research to develop SFBT. Relying on intensive clinical observation they discovered that it was not necessary to focus on the details and analysis of problems for clients to function better and to be satisfied with therapy (Franklin et al., 2023).

Instead of using problem solving methods that are found in the MRI brief therapy and many other interventions; de Shazer and Berg focused on goals and solution development in the future - encouraging clients to envision what the clients wanted to be different when the

presenting problems are solved (de Shazer, 1985; 1988; 1991; de Shazer et al. 1986). They used a coconstruction process of language and several questioning techniques to help clients build their own solutions. Coconstruction involves carefully listening to clients' words and language and purposing selecting their words to build on strengths, resources, and solutions with the therapeutic goal to move conversation toward practical outcomes that the client desires (Franklin et al., 2017). Questions used in SFBT include: a) scaling questions where clients are asked to scale their goal on a scale of 0-10 and to reflect on how to get to the next number. b) miracle questions where clients are asked to imagine an alternate reality where their problems are solved and to describe what they would be noticing that is different in their lives. c) coping questions where clients are asked to reflect on how they managed to get through a difficult situation (Franklin et al., 2017). For greater explanation about the therapeutic history and techniques of SFBT, see de Jong, 2019; Franklin, Riley and Kim (in press).

On the average SFBT is delivered in approximately six sessions according to past reviews that have studied session numbers (e.g., Neipp & Beyebach, 2022). The important distinguishing characteristics of SFBT include its' therapeutic stance toward building a respectful, collaborative and cooperative relationship with clients, which is also assumed to improve the therapeutic alliance (Flückiger, 2020; Franklin et al., 2017; Zuroff et al., 2007). The focus of SFBT is directed toward a future orientation, strengths, goals, and resources of clients (Jerome et al., 2023). SFBT facilitates a high level of involvement of the client in developing their own solutions promoting self agency and self efficacy. Other important characteristics of SFBT include increasing the client's hope and positive emotions, and focusing on the client's desired outcomes (Franklin, Sucher & Kim, in press; Franklin et al., 2019; Trepper et al., 2011). All of these characteristics make SFBT a unique brief intervention, which has developed its own outcome studies that have now accumulated over

the past 45+ years, making it important to conduct a comprehensive meta-analysis of its effects on psychosocial outcomes.

Previous Systematic Reviews and Meta-Analyses on SFBT

To our knowledge, there has only been three comprehensive narrative reviews (Gingerich & Eisengart, 2000; Gingerich & Peterson, 2013; Neipp & Beybach, 2022) and two comprehensive meta-analyses that have been published on SFBT (Kim, 2008; Stams et al., 2006). The first narrative review of SFBT outcome research was completed by Gingerich and Eisengart in 2000. These researchers found only five well controlled studies that met their criteria for an SFBT intervention. The five studies included varied settings, including college mental health, the rehabilitation of orthopedic patients, prison and juvenile justice systems, and parenting groups. All five of these studies reported positive psychosocial outcomes on measures such as depression, coping skills, return to work, recidivism, and parenting skills (Gingerich & Peterson, 2000, cited in Gingerich et al., 2011). In another comprehensive narrative review, Gingerich and Peterson (2013) discussed the results from 43 RCT and quasi-experimental studies examining SFBT intervention, research designs, and outcomes. These studies overall showed that thirty-two (74%) of the studies reported significant positive outcomes and 10 (23%) reported positive trends. The strongest outcomes they found in their review was on depression symptoms in adults, where four separate studies found SFBT to be comparable to evidenced-based, comparative treatments. Importantly, three studies examined length of treatment and all found that SFBT used fewer sessions than comparative interventions. The researchers found that SFBT was used in a broad area of services delivery within community settings including mental health, rehabilitation, and youth and family counseling.

In a third more recent narrative systematic review of SFBT outcome research, Neipp and Beybach (2022) conducted a broad study of 251 published studies including all outcome

studies that they could find over the past thirty years until their ending date in 2021. The SFBT interventions in each study were classified as psychotherapy, coaching, school/college counseling, child protection, community interventions, and organizational interventions. This systematic review examined a broad array of research designs including RCTs, quasi-experiments, qualitative and single case studies, and also included some studies that integrated SFBT with other interventions. Results indicated that 86.3% of the studies had positive outcomes and 9 out of 10 studies showed that SFBT was superior to the comparison condition. This study did not report detailed analysis of the specific outcomes achieved by different measures, but reported the types of measures used. Over 50% of the measures were psychological measures such as depression, followed by behavioral outcomes such as parent ratings, days of missed work, and other behavioral rating scales. These findings indicate that SFBT is used to change many different types of psychosocial problems. A descriptive analysis of the type of treatment modality (i.e., individual, group, family) showed that all modalities were effective, but that the group interventions were more effective than other modalities and that there were few studies on the family modality.

Meta-Analyses

The first comprehensive meta-analysis was completed by Stams et al. (2006) and examined twenty-one studies, with $N = 1,421$, and yielded significant and positive results showing small to medium effect sizes $d = 0.37$ (95% $CI: 0.19 < d < 0.55$). Moderator analyses revealed that SFBT had a positive effect if compared to no-treatment, $d = 0.57$, but that the effect was not significantly larger than the effect of treatment as usual: $d = 0.16$. Moderator analyses also revealed that adults benefited more from SFBT ($d = 0.61$) than did children and adolescents. Clients residing in institutions, such as prisons, benefited more from SFBT ($d = 0.60$) than did non-residential clients such as family/couples ($d = 0.40$) and students ($d = 0.21$). Externalizing behavior problems showed a larger effect ($d = 0.61$) than marital

problems ($d = 0.55$), internalizing problems ($d = 0.49$), or mixed problems ($d = 0.22$). Group therapy clients had better outcomes ($d = 0.59$) than did individual therapy clients ($d = 0.33$). Finally, the effect of SFBT was larger for non-controlled studies ($d = 0.84$) than for controlled studies ($d = 0.25$).

Two years after the Stams et al. meta-analysis, Kim (2008) conducted a comprehensive meta-analysis on twenty-two SFBT studies ($N=1,534$ participants). Kim categorized outcomes into three areas (a) externalizing behavior problems, (b) internalizing behavior problems, and (c) family or relationship problems. For internalizing behavior problems the effect sizes ranged from -0.46 to 1.18 , and the results showed an overall small effect size that was statistically significant. Externalizing behaviors (-0.43 to 0.74) were not statistically significant. On the family and relationship problems outcomes the effect sizes ranged from -0.56 to 1.23 and were not statistically significant. This study did not perform any moderator analysis.

Both Stams et al. (2006) and Kim's (2008) comprehensive meta-analysis contributed greatly to the SFBT literature even though the studies were somewhat different and not directly comparable. Since the publication of these two existing comprehensive, meta-analyses there was a trend to publish targeted meta-analyses and systematic reviews and this has likely occurred because of the growth in SFBT research and an increasing interest in particular applications. As of 2019, Kim et al. reported that there were 8 meta-analyses that had been conducted on SFBT and that the overall effect sizes for studies ranged from small to large effect sizes, indicating that SFBT is an effective intervention for a variety of psychosocial problems in various study samples. Samples included families, children, adolescents, and adults and included different countries and ethnicities such as, Chinese, Korean, North American, Europeans, Latino, and African-Americans in the study samples. Targeted reviews have been published, for example, on children and adolescents (e.g., Bond,

et al., 2013; Hsu et al., 2021; Schmit et al., 2016); trauma (Eads & Lee, 2019); health care (Zhang et al., 2018); and schools and community settings (Franklin et al., 2022; 2023; Gong & Hsu, 2017; Karababa, 2024). All of these studies have shown positive effects of SFBT on various psychosocial outcomes.

In summary, the current narrative reviews and meta-analyses indicate that SFBT is shorter in duration than comparative interventions (Gingerich & Peterson, 2013; Stams et al., 2006; Neipp & Beyebach, 2022). Outcomes measured in meta-analyses are broad and include those associated with depression, stress, anxiety, behavioral problems, parenting, substance use, and interpersonal difficulties (Kim et al., 2019). Kim et al. (2019) also reported that internalizing mental health outcomes such as depression, stress, and anxiety were studied across seven of the eight meta-analysis they reviewed, showing small effect sizes in some studies (Gong & Hsu 2017), and in other studies large effect sizes (Kim et al., 2015). It is important to note that some reviews have shown that SFBT shows more favorable results for externalizing outcomes with both children and adults (Bond et al., 2013; Hsu et al., 2021; Stams et al., 2006). The state of research evidence suggests that SFBT is likely effective with both children and adolescents and adults from different races and cultures and on several psychosocial outcomes. At this time, however, research is still needed to examine for which outcomes, settings, ethnicities, and therapeutic modalities SFBT is most effective.

Improving Existing Meta-analyses

Franklin et al. (2023), reported limitations in current meta-analyses: (1) lack of specificity in mental health outcomes, grouping all measures into broad constructs such as internalizing problems, thus limiting the information on specific outcomes (e.g., depression or anxiety); (2) identification of specific populations; and (3) explaining inconsistent findings across studies. One area for improvement is that the couple and family modality and family functioning outcomes need further investigation because of lack of available studies and even

when included in analysis the findings have not been statistically significant (e.g., Hsu et al., 2021; Kim, 2008) when compared to other treatment modalities. One exception is a recent study by Franklin et al. (2023) that analyzed 28 RCT studies, and found that the family functioning outcome improved and showed a medium effect size. In the current meta-analysis we will examine family outcomes, and improve upon how studies were assessed by creating a distinction between SFBT studies targeting couples and other family members.

A weakness in SFBT meta-analyses is the non-examination of moderators (i.e., age, gender, income, race, treatment modality, research designs) that can provide us more clinically significant outcomes related to for whom and on what outcomes SFBT is most effective. No comprehensive meta-analysis on SFBT with a thorough moderator analysis has been completed for almost twenty years since the study by Stams et al. in 2006. Two recent targeted meta-analyses included some moderators in their analysis that the current meta-analysis will build upon. For example, Franklin et al. (2022) compared SFBT treatment modalities in schools, and found that groups had a greater statistical effect than individual modalities. SFBT was also more effective with females than males. The treatment effect of SFBT for student outcomes was significantly greater in comparison to treatment-as-usual ($d = 0.140$) and to waitlist control ($d = 1.690$), but not significantly different than alternative interventions ($d = 0.103$). Franklin et al. (2023) also conducted a subgroup analysis associated with the numbers and types of SFBT techniques used and found that including 4-9 techniques and using diverse techniques across co-construction, strengths and resources, and future focused techniques showed the largest statistical difference on outcomes compared to not using the clinical techniques in these ways.

The current meta-analysis will include moderator analyses to improve upon existing studies. Meta-analytic techniques have improved over the years, making it possible to examine both within-study and between-study effects by means of a three-level approach to

the analyses, which increases statistical power and facilitates the examination of more moderators than was feasible in traditional meta-analyses (Assink et al., 2016). This allows for the investigation of whether the effectiveness of SFBT varies with different characteristics of the intervention (e.g., treatment setting, treatment modality, treatment integrity, number and type of SFBT techniques used, treatment duration, and number of sessions), characteristics of primary study participants (e.g., gender, age, clinical or non-clinical sample), or the type of psychosocial problem being treated.

Current Study Aims

The aim of this meta-analysis was to improve upon currently available reviews by providing a greater breadth of clinical representative studies, and more comprehensive moderator analyses. To our knowledge, the current meta-analysis on SFBT effectiveness is the most comprehensive so far including a variety of studies across countries, populations, settings, modalities, and psychosocial problems. Moderator analyses will be conducted to examine if study and publication characteristics influence the effectiveness of SFBT, such as type of comparison group, study quality, publication status, publication year, journal impact factor, and continent where primary studies were performed (Europe, North-America, Asia, Middle East, and Middle-America). This provides important information for the use of SFBT in clinical practice. The results will support the development of clinical guidelines by clarifying the effectiveness of SFBT for different psychosocial problems of clients treated in mental health and other treatment or intervention settings. It will also show whether differences in effectiveness within and between studies can be explained by characteristics of the client, the intervention, or the study.

Methods

Transparency and Openness

This meta-analysis adheres to the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) guidelines for systematic reviews (Page et al., 2021). This meta-analysis was pre-registered at PROSPERO: CRD42022333361.

Inclusion Criteria

Studies were eligible for inclusion if they met criteria regarding type of studies, characteristics of participants, and type of sample. Clinically representative effectiveness studies often use a quasi-experimental outcome design instead of RCT (Shadish et al., 2000). Therefore, controlled clinical trials with or without randomization (experimental studies/RCT's and quasi-experimental studies) were included. The control group had to be treatment as usual, alternative treatment (e.g., placebo), or no treatment (e.g., waitlist control), but not SFBT. Included studies were limited to psychotherapy and behavior change studies focused on problematic conditions or behaviors in individuals, families or small groups, which are often treated in (mental) health settings, and in other treatment or intervention settings (e.g., schools, residential institutions, foster care; c.f. Gingerich and Peterson, 2013). Studies that examined the effectiveness of coaching or nursing (instead of psychological treatment or counseling), or that examined indirect interventions (such as staff training) were excluded. No restriction on participants' characteristics were imposed regarding age, gender, socio-economic status, or type of psychosocial problem.

The intervention described in a primary study had to be considered solution-focused brief therapy, regardless of the treatment setting, treatment modality (individual, group, or combined, online), expertise of the therapist, duration of therapy, or number of sessions (since there is no definition of the amount of sessions in SFBT). The study had to specifically describe the content of the SFBT intervention. If such a description was lacking the study was excluded. The SFBT intervention had to include one or more of the following core components, similar to the review of Gingerich and Eisengart (2000) and the meta-analysis of

Kim (2008): (1) a search for pre-session change, (2) goal-setting, (3) use of the miracle question, (4) use of scaling questions, (5) a search for exceptions, (6) a consulting break, and (7) a message including compliments and tasks. In Trepper et al. (2011) these core techniques are explained. If a study did not contain at least one of these core components, or in case a study combined SFBT with other components of different therapeutic interventions, it was not included.

No restriction on publication characteristics were imposed regarding publication date, or publication status. Included languages were English, Dutch, French, and German. Other languages were excluded.

Selection of Studies

Multiple searches were conducted to identify and select relevant studies for this meta-analysis. The electronic databases PsycINFO, Medline, EMBASE, ERIC, and Web of Science Core Collection were searched (until 27th of February 2024) for controlled clinical trials with or without randomization. We decided to disregard the databases Scopus and Cochrane CENTRAL, as they add very little unique records particularly when Medline and Embase are part of the electronic search strategy (Bramer et al., 2017). Search strings consisted of a combination of search terms for SFBT and study characteristics. See supplemental materials for the full search syntax.

The electronic database search resulted in 1,982 articles, which were deduplicated with Zotero and then independently screened based on title and abstract by the two authors E. Vermeulen-Oskam and L.P.M. van 't Hof (in Rayyan). If necessary the full text of a publication was reviewed. Disagreement between authors was resolved by consensus, and if necessary by discussion with a third author (G.J.J.M. Stams). In the end, 57 articles were identified and included following the electronic database search.

A supplementary search was performed in Google Scholar, and by consulting the Solution-Focused Brief Therapy Association website (<http://www.sfbta.org/>). Google Scholar was searched with the syntax as presented in Appendix B of the supplemental materials. The hits produced by Google Scholar were screened until they were no longer relevant. We set a maximum of 1,000 as a practical and feasible number of hits to screen (Bramer et al., 2013). After screening 200 hits, the relevance decreased enormously, and we decided to stop screening further hits. Further, we screened the reference lists of several relevant review studies to find additional studies (Bond et al., 2013; Eads & Lee, 2019; Franklin et al., 2017; Franklin et al., 2022; Franklin et al., 2023; Franklin & Hai, 2021; Gingerich & Peterson, 2013; Hsu et al., 2021; Kim, 2008; Reddy et al., 2022; Schmit et al., 2016; Stams et al., 2006, Zhang et al., 2018). Experts in the field, who also co-authored this study (C. Franklin, A. S. Froerer and A. Zhang), were consulted for any references which were potentially missing in previous steps of the search strategy. The supplementary search led to an additional 22 studies, bringing the total number of eligible studies to 79. Studies that are included in this meta-analysis but are not discussed in the manuscript text, are referenced in the supplemental materials (Appendix A). The PRISMA flow diagram for summarizing the study selection processes is presented in Figure 1.

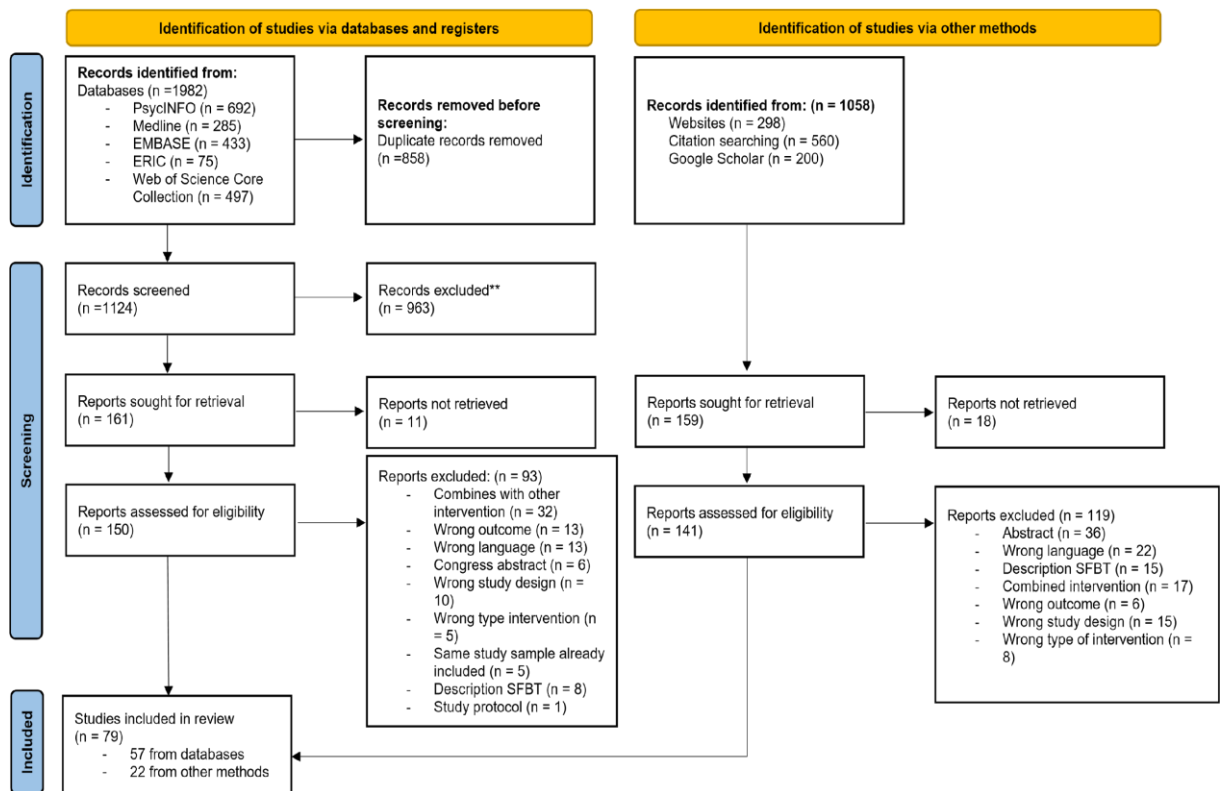


Figure 1. Flowchart of study selection procedure, following the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA)

Study Coding

We developed an SPSS data extraction sheet to code participant, intervention, study, and publication characteristics. Missing values were left blank. The coding scheme was pilot-tested on ten randomly-selected studies, and refined accordingly. The studies were coded by three coders (authors E. Vermeulen-Oskam, L.P.M. van 't Hof and E.J. Veltman) who were trained by an expert in both meta-analysis and SFBT, which also serves as co-author of this study (G.J.J.M. Stams). Reliability of the codings was secured by intensive training, which was finished after high levels of reliability (ICC > .80, and Kappa > .90) were achieved. Disagreements were resolved by discussion with the expert (co-author G.J.J.M. Stams). During the coding process, coding problems pertaining to unclarities in the text of the included primary studies were resolved in weekly meetings with this expert. After all studies

were coded, coding reliability was checked for 25% of the studies, which proved to be perfect, except for two variables: 'treatment modality', still yielding a Kappa of .83 and 'Type of non-clinical sample', yielding a Kappa of .64. This Kappa statistic is unrelated to the percentage of studies that are scored for reliability purposes. Scoring more studies would not guarantee higher Kappa reliabilities. Nevertheless, extra efforts were made to check the coding of 'treatment modality' and 'type of non-clinical sample' in those cases where the text of primary studies could have led to coding discrepancies. If discrepancies were indeed encountered, a consensus meeting was held after which a decision was made on the final coding.

Participant Characteristics

The following characteristics of primary study participants were coded: age, percentage of males in the sample, whether the study sample was mixed or all-male or all-female, ethnicity, socio-economic background, target group, and type of outcome: family functioning, marital functioning, school adjustment, externalizing problems, anxiety, depression, internalizing problems (not otherwise specified), general mental health, coping, social relationships, addiction, well-being, and other outcomes that could not be classified in one of the other outcome categories.

If a study measured multiple psychosocial problems with a pre- and post-measurement, then all relevant outcomes were included. As we conducted a three-level meta-analysis, which takes into account effect size dependency and allows for the inclusion of all relevant effect sizes, there was no need to disregard or aggregate effects of SFBT on relevant outcomes. The types of participants were also coded: patients, students, family members, parents, delinquents (incarcerated offenders or individuals having a probation sentence), couples, and foster children. Further, the type of sample (clinical or non-clinical) was coded. The study sample was considered non-clinical when participants were actively recruited for

the SFBT intervention and were not yet receiving or seeking psychological care. The type of non-clinical sample was also coded with three categories: at-risk individuals (if specifically at-risk individuals were recruited; usually selected based on specific outcomes on questionnaires), members of at-risk groups (if specifically at-risk groups were recruited), and the general population. This categorization is derived from the Institute of Medicine (2009) that reports as follows on prevention types: 'universal preventive interventions' are targeted to the general population that has not been identified on the basis of individual risk, 'selective preventive interventions' are targeted to individuals or a population subgroup whose risk of developing mental disorders is significantly higher than average and 'Indicated preventive interventions' are targeted to high-risk individuals.

Intervention Characteristics

As for intervention characteristics the following variables were coded: intervention target (mental health problems, well-being, social functioning, family functioning, marital functioning, school functioning, antisocial behavior, addiction, other), modality of treatment (individual, group, family, mixed), treatment setting (outpatient, inpatient, community based, school/university, correctional (non)institution, hospital/medical center, other), the number and type of used SFBT techniques, whether the therapist was specifically trained in SFBT, duration of treatment, the number of sessions, and whether the intervention was online or offline. If treatment integrity was assessed in a primary study, it was coded when a valid and reliable instrument for assessing treatment integrity was used. In coding treatment modality, it was considered an individual intervention if it was 'one-on-one' with the therapist; i.e., if a couple was treated by a therapist, it was coded as an individual intervention. This was decided as in some non-Western studies, only women participate in couple therapy, often in (female-only) group sessions. We did analyze couples as a separate client group.

Publication Characteristics

The following publication characteristics were coded: publication status (published article or dissertation), year of publication, the continent where the study was performed, and the 5 year-impact factor of the journal in which the study was published. The latter was retrieved from a journal's website or Academic Accelerator.

Study Characteristics

The following study characteristics were coded: nature of the comparison group (TAU, alternative, no treatment), duration of TAU (brief versus long), whether or not participants were allocated randomly to the experimental or control condition, type of measurement (questionnaire or other), type of informant (self-report, therapist-report, or other report), type of measurement (post-test or follow-up), and in case of a follow-up measurement the follow-up duration (in months).

Study Quality

A quality index similar to that of Conley et al. (2022) was used by the three trained coders to assess study quality. This index draws upon the strengths of multiple previously validated quality indices, including the Cochrane Collaboration's tool for assessing the risk of bias, and follows the approach of an integrative study quality coding scheme. Each study was rated on 10 features in this index: peer review and impact factor, experimental design, sample size, attrition, reliability of measures, validity of measures, adjustment for pretest differences, intent-to-treat analysis, reporting of sample characteristics, and involvement of study authors in the given intervention. A 4-point scale (from 0, indicating the lowest quality, to 3, indicating the highest quality) was used for rating each item. The sum of the 10 item scores resulted in a quality score for each included study that ranged from 8 to 27, for which a score of 20 represents average or normal research practices (see Conley et al., 2022).

Calculation of Effect Sizes

The unbiased effect size estimate was the standardized difference between the means of a treatment group and a control group, also referred to as Hedges' g , which controls for small sample biases (Hedges, 1981). Formulas of Borenstein et al. (2009), Cohen (1988), Hedges and Olkin (1985), Lipsey and Wilson (2001), and Ruscio (2008) were used to calculate g whenever these values could not be extracted directly from an included study. To apply these formulas, the *Effectsize: Indices of effect size* R package was used (Ben-Shachar, 2020).

Statistical Analyses

Most included studies reported multiple intervention effects, for instance because multiple outcomes were tested or participants were examined at multiple timepoints. The resulting effect size dependency violates the assumption of effect size independency underlying traditional meta-analytic techniques, which uses a regression framework (Lipsey & Wilson, 2001). Therefore, a three-level random-effects meta-analysis (Assink & Wibbelink 2016; Assink & Wibbelink 2024) was performed to (1) calculate the overall effect of SFBT on the level of symptoms of psychosocial problems, and (2) to examine whether the overall effect is influenced by the coded study, intervention, or participant characteristics. This three-level approach to meta-analysis takes effect size dependency into account by distributing the total effect size variance on three levels of the model: the sampling variance of the observed effect sizes at level 1, the variance in effect sizes within studies at level 2, and the variance in effect sizes between studies at level 3. By modeling dependency in effect sizes, all relevant effect sizes as reported in primary studies can be retained, and a maximum in statistical power can be achieved (Assink & Wibbelink, 2016). Simulation studies of Van den Noortgate et al. (2013) and Moeyaert et al. (2017) have revealed that multilevel meta-analytic models can account for all dependency in (multivariate) effect size data (see also Assink & Wibbelink, 2024).

To determine whether moderator analyses would make sense, we first examined effect size heterogeneity by testing the significance of the within-study variance (level 2) and between-study variance (level 3). This was done by performing a one-sided log-likelihood ratio test for each of the two variance components in which the deviance of the full model was compared to the deviance of a model excluding the variance component. If the within-study and/or between-study variance proved to be heterogeneous, we proceeded with moderator analyses in attempts to identify (coded) variables that may explain the effect size heterogeneity. Finally, a multiple moderator model was examined to determine the (unique) contribution of each previously identified moderator, controlling for all other moderators.

The statistical analyses were performed in the R statistical environment (R Core Team, 2020) using the *rma.mv* function of the *metafor* package (Viechtbauer, 2010) and following the setup and R syntax described by Assink and Wibbelink (2016). An intercept-only model was built to assess the overall effect, and bivariate moderator analyses were performed by adding a coded variable as a covariate to an intercept-only model. A multiple moderator model was built when at least two coded variables were identified as moderators in the bivariate moderator analyses. The estimation of model coefficients was based on the restricted maximum likelihood estimation method, and the testing of individual regression coefficients were based on the *t* rather than the *z* distribution (Knapp & Hartung, 2003). Prior to the analyses, we centered continuous variables on their mean and recoded categorical variables into dummy variables. We also checked for outliers in the Hedges' *g* values by calculating standardized *z* scores. A *g* value was considered an outlier if the corresponding *z* score exceeded 3.2 or was smaller than -3.2 (Tabachnick & Fidell, 2013). The significance level was set to .05 in all analyses, and 95% CIs were calculated.

For the purpose of clinical importance, we converted effect sizes into percentages of change of the experimental group, designated as Success Rate Difference (SRD), using a

formula provided by Kraemer and Kupfer (2006), transforming Hedges' g (Standardized Mean Difference; SMD) into the Area Under Curve (AUC) statistic, subsequently computing a percentage of change or SRD through: $(2 * AUC - 1) * 100$.

Bias Assessment

Risk of bias was addressed by testing study quality as a moderator, in which the quality index was based on an extension of the Cochrane's tool for assessing risk of bias (as described earlier), and by comprehensive publication and selection bias analyses. Studies with non-significant or negative results are less likely to be published than studies with significant and positive results, which is referred to as publication bias or the *file drawer problem* (Rosenthal, 1995). To determine to what extent the results were affected by bias we first performed the adjusted three level Egger's regression test (Egger et al., 1997) as described by Fernández-Castilla et al. (2020; 2021). This technique concerns a test of the association between effect sizes and their standard errors, taking into account the effect size dependency. A significant association is indicative of bias. We also performed the trim-and-fill analysis (Fernández-Castilla et al., 2020; 2021), which is based on the assumption that the effect size distribution is symmetrical when bias is absent. In this technique, the estimated number of effect sizes in the left or right side of the effect size distribution is related to a cut-off value of the trim-and-fill method estimator. If this number exceeds the cut-off value, this may indicate publication or selection bias. Finally, the moderating effects of journal impact factor and publication year of studies were tested. A significant effect indicates that publication bias may exist, and/or a decline effect (over time), respectively.

Results

This meta-analysis synthesized 79 studies (with 72 non-overlapping samples) that were published between 1993 and 2023, and were conducted in Europe ($k = 20$), North-America ($k = 17$), Asia ($k = 8$), Middle East ($k = 25$) and Middle-America ($k = 1$). The studies were based on a total of $N = 4,356$ participants ranging from $n = 12$ (Wiretna, 2020) to $n =$

413 (Wallace, 2020), and produced 489 relevant effect sizes in total. The forest plot in Figure 2 shows how these effect sizes are distributed.

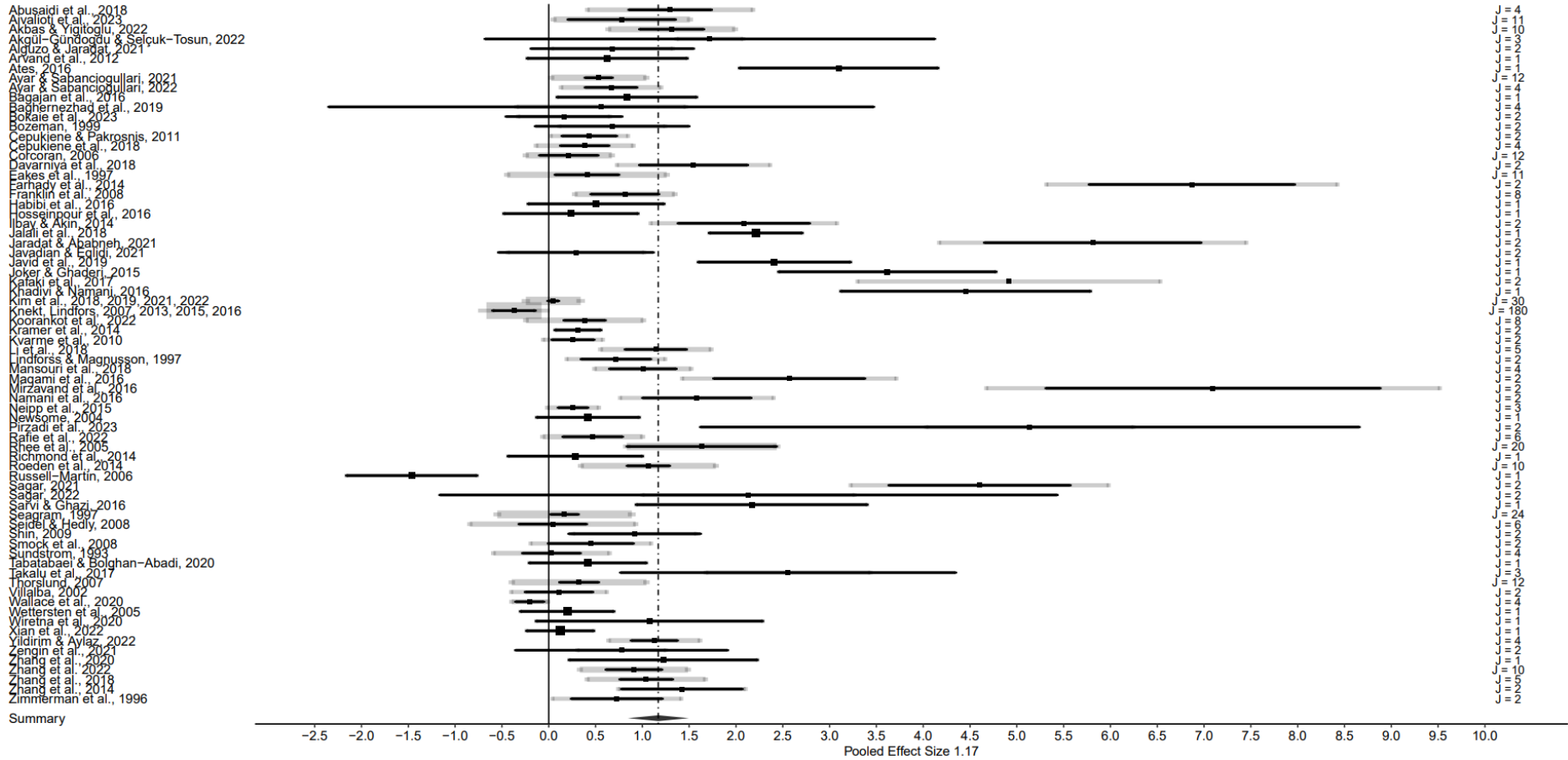


Figure 2. Forest plot

Overall Effectiveness of SFBT

The mean effect size (see Table 1) of SFBT was $g = 1.17$ (95% *CI*: $0.85 < g < 1.50$). This is a significant ($p < .001$) and large effect, which indicates that SFBT significantly and effectively improves psychosocial functioning. In all effect sizes, 8 outliers were identified, of which 7 were positive and 1 was negative. When the overall mean effect was estimated without these outliers, a marginal difference was found ($g = 1.11$, $p < .001$). When the raw values of the outlying effect sizes were substituted with a value that (just) fell within the normal range, the overall mean effect remained significant. Since the Helsinki Psychotherapy Study, which measured multiple relevant outcomes up to 10 years, produced 180 of the 496 effect sizes (Knekt et al., 2007, 2013, 2015, 2016; Lindfors et al., 2015), a sensitivity analysis was performed. Removing this study from the effect size dataset resulted in a somewhat larger overall effect of SFBT ($g = 1.23$, $p < .001$). Because both the within-study variance (50.31 %) and the between-study variance (48.20 %) were found to be significant (see Table 1), there was substantial indications for heterogeneity in effect sizes and thus we proceeded with moderator analyses.

Table 1. Overall Effectiveness of SFBT

	<i>k</i>	#ES	<i>M g</i>	95% <i>CI</i>	<i>p</i>	$\sigma^2_{\text{level } 2}$	$\sigma^2_{\text{level } 3}$	% Var. Level 1	% Var. Level 2	% Var. Level 3
Overall SFBT effect	72	489	1.17	0.85, 1.50	.001	1.378*	1.320*	1.49	50.31	48.20

Note. *k* = number of studies; #ES = number of effect sizes; *M g* = mean effect size; *CI* = confidence interval; $\sigma^2_{\text{level } 2}$ = variance between effect sizes of the same study; $\sigma^2_{\text{level } 3}$ = variance between studies; % Var = percentage of variance distributed.

* $p < .001$

Moderator Analyses

The results of the bivariate moderator analyses are presented in Table 2. In these analyses, we only examined variables when they (or their categories) were based on at least 5 effect sizes.

Table 2. Results of Bivariate Moderator Analyses

	<i>k</i>	<i>#ES</i>	<i>b₀/g</i>	<i>t₀</i>	<i>b₁</i>	<i>t₁</i>	<i>F(df₁, df₂)</i>
Participant characteristics							
<i>Psychosocial outcomes</i>							<i>F</i> (12, 476) = 1.815*
General psychological well-being	26	76	1.21	5.685***			
General mental health	16	63	1.17	5.183***	0.03	-0.152	
Anxiety	15	54	0.76	3.204**	-0.45	-1.941 ⁺	
Depression	18	53	0.97	4.123***	-0.24	-1.014	
Internalizing problems	17	44	0.80	3.050**	-0.41	-1.464	
Externalizing problems	12	44	1.00	3.565***	-0.21	-0.700	
Addiction	4	8	1.31	2.686**	0.11	0.221	
Family functioning	6	20	0.84	2.209*	-0.37	-0.939	
Marital functioning	7	13	3.02	5.454***	1.81	3.054**	
School adjustment	9	14	1.20	2.804**	-0.01	-0.023	
Coping	8	39	0.87	3.338***	-0.33	-1.326	
Social outcomes	15	52	0.96	4.016***	-0.25	-1.081	
Other outcomes	4	9	0.23	0.443	-0.98	-1.842 ⁺	
<i>Demographics</i>							
Age (categorized)							<i>F</i> (1, 487) = 0.461
Adult	49	390	1.25	6.226***			
Youth	23	99	1.01	3.407***	-0.24	-0.679	
Gender (percentage male)	63	453	1.10	6.825***	-0.01	-1.140	<i>F</i> (1, 451) = 1.299

<i>Participants</i>							$F(6, 482) = 2.598^*$
Patients	27	348	0.79	2.299**			
Students	26	73	1.26	4.660***	0.47	1.307	
Family members	2	5	1.70	1.833 ⁺	0.91	0.952	
Parents	5	16	1.35	2.362*	0.56	0.911	
Delinquents	3	28	0.54	0.761	-0.25	-0.326	
Couples	7	13	3.02	5.410***	2.23	3.679***	
Foster children	2	6	0.41	0.455	-0.38	-0.410	
<i>Type of sample</i>							$F(1, 487) = 4.503^*$
Non-clinical	45	119	1.50	6.786***			
Clinical	27	370	0.78	2.996**	-0.72	-2.122*	
<i>Type of non-clinical sample</i>							$F(2, 116) = 0.476$
At risk individuals	31	91	1.65	5.890***			
Members of at risk groups	11	19	1.09	2.230*	-0.55	-0.970	
General population	3	9	1.41	1.575	-0.23	-0.248	
Intervention characteristics							
<i>Intervention target</i>							$F(8, 480) = 2.528^*$
Mental health problems	19	265	0.77	2.606**			
Well-being	21	56	1.74	5.691***	0.97	2.302*	
Social functioning	2	12	0.74	0.848	-0.03	-0.036	
Family functioning	2	13	0.55	0.632	-0.22	-0.237	
Marital functioning	7	13	3.02	5.356***	2.25	3.537***	
School functioning	7	31	0.66	1.361	-0.11	-0.185	
Antisocial behavior	5	39	0.81	1.409	0.04	0.061	
Addiction	5	40	0.82	1.419	0.05	0.070	
Other	3	20	0.46	0.780	-0.31	-0.471	
<i>Modality of treatment</i>							$F(3, 485) = 4.606^{**}$
Group	44	111	1.64	7.922***			

Individual	23	343	0.48	1.908 ⁺	-1.16	-3.537 ^{***}	
Family	2	23	0.33	0.421	-1.31	-1.642	
Mixed	3	12	1.43	1.943 ⁺	-0.21	-0.276	
<i>Treatment setting</i>							$F(6, 482) = 2.430^*$
School/University	27	74	1.23	4.618 ^{***}			
Outpatient	12	295	0.45	1.353	-0.78	-1.831 ⁺	
Inpatient	2	16	0.60	0.737	-0.63	-0.738	
Community based	16	33	2.17	6.159 ^{***}	0.94	2.123 [*]	
Correctional (non)institution	3	28	0.54	0.757	-0.69	-0.906	
Hospital/ medical Center	8	34	1.19	2.633 ^{**}	-0.05	-0.094	
Other	4	9	0.67	0.990	-0.56	-0.774	
<i>Online</i>							$F(1, 487) = 0.873$
Yes	3	6	0.42	0.612			
No	69	483	1.21	7.120 ^{***}	0.79	0.934	
<i>Number of used SFBT techniques</i>	72	489	1.22	5.591 ^{***}	0.04	0.325	$F(1, 487) = 0.106$
<i>Pre-session change</i>							$F(1, 487) = 0.603$
Yes	11	250	0.89	2.212 [*]			
No	61	239	1.23	6.767 ^{***}	0.34	0.777	
<i>Goal setting</i>							$F(1, 487) = 1.364$
Yes	61	441	1.26	6.984 ^{***}			
No	11	48	0.73	1.776 ⁺	-0.53	-1.168	
<i>Miracle question</i>							$F(1, 487) = 1.848$
Yes	56	403	1.29	6.903 ^{***}			
No	16	86	0.75	2.141 [*]	-0.54	-1.359	
<i>Scaling question</i>							$F(1, 487) = 0.101$
Yes	46	393	1.14	5.499 ^{***}			
No	26	96	1.25	4.429 ^{***}	0.11	0.318	
<i>Search for exceptions</i>							$F(1, 487) = 0.784$

Yes	53	432	1.26	6.581***			
No	19	57	0.92	2.756**	-0.34	-0.886	
<i>Consulting break</i>							$F(1, 487) = 3.508^+$
Yes	6	226	0.27	0.528			
No	66	263	1.27	7.454***	1.00	1.873 ⁺	
<i>Message including task</i>							$F(1, 487) = 0.040$
Yes	48	348	1.20	5.819***			
No	24	141	1.13	3.974***	-0.07	-0.199	
<i>Length in weeks</i>							$F(1, 255) = 0.048$
<i>Number of sessions</i>							$F(1, 224) = 1.927$
Characteristics of the study							
<i>Comparison group</i>							$F(1, 484) = 14.577***$
No treatment	48	154	1.59	8.397***			
TAU	25	332	0.58	2.570*	-1.01	-3.818***	
<i>Duration of TAU</i>							$F(1, 333) = 1.642$
Brief	20	194	0.57	3.675***			
Long	6	149	0.36	1.911 ⁺	-0.21	-1.281	
<i>RCT</i>							$F(1, 487) = 0.254$
Yes	42	374	1.11	5.180***			
No	30	115	1.28	4.821***	0.17	0.504	
<i>Quality index of the study</i>							$F(1, 487) = 0.147$
<i>Type of measurement</i>							$F(1, 487) = 0.663$
Questionnaire	70	482	1.19	7.146***			
Other	3	7	0.66	1.003	-0.53	-0.814	
<i>Self-report</i>							$F(1, 480) = 2.582$
Yes	69	434	1.21	7.204***			
No	8	48	0.88	3.433***	-0.33	-1.607	
<i>Time of measurement</i>							$F(1, 481) = 1.098$

Post-test	70	240	1.23	7.221***			
Follow-up	25	243	1.03	4.632***	-0.20	-1.048	
<i>Time after initial measure (months)</i>	64	439	1.19	6.180***	-0.01	-2.296*	$F(1, 437) = 5.272^*$
<i>Post-test (months)</i>	63	199	1.32	6.853***	-0.07	-0.514	$F(1, 197) = 0.264$
<i>Follow-up (months)</i>	24	239	0.72	3.135**	-0.01	-1.780 ⁺	$F(1, 237) = 3.167^+$
Publication characteristics							
<i>Year of publication</i>	72	489	1.13	6.991***	0.03	1.728 ⁺	$F(1, 487) = 2.985^+$
<i>Published</i>							$F(1, 487) = 3.974^*$
Yes	67	456	1.26	7.469***			
No	5	33	0.01	0.017	-1.25	-2.993*	
<i>Impact factor</i>	67	456	1.30	7.092***	0.03	0.593	$F(1, 454) = 0.352$
<i>Continent</i>							$F(4, 484) = 5.678^{***}$
Europe	20	270	0.96	3.705***			
North-America	17	126	0.38	1.330	-0.58	-1.489	
Asia	8	34	0.89	2.110*	-0.06	-0.131	
Middle east	25	53	2.13	8.003***	1.18	3.165**	
Middle America	1	6	0.04	0.038	-0.92	-0.827	

Note. k = number of studies; #ES = number of effect sizes; b_0/g = intercept/ mean effect size (g); $t_0 = t$ value for significance of the mean g ; b_1 = slope that represents the difference in mean effect relative to the reference category in case of a discrete variable; $t_1 = t$ value for significance of the slope; $F(df_1, df_2)$ = omnibus test of all model coefficients excluding the intercept to determine a moderator effect.

⁺ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Characteristics of Participants

Moderator analyses showed that the type of psychosocial outcomes as reported in the primary studies was a significant moderator, indicating a larger mean effect for marital functioning ($g = 3.02$) compared to general psychological well-being ($g = 1.21$) of which the mean effect was comparable in terms of magnitude to the mean effects of all other outcomes. This large effect for marital functioning was reflected in the mean effect that was found for

couples ($g = 3.02$), which was significantly larger than for other target groups of participants, such as patients ($g = 0.79$), students ($g = 1.26$), family members ($g = 1.70$), and parents ($g = 1.35$). We also found that SFBT produced a larger effect in non-clinical samples ($g = 1.50$) than in clinical samples ($g = 0.78$). The type of non-clinical sample (general population, members of an at risk group/subpopulation, or at risk individuals), age (adult or youth) and gender of the participants did not affect the effectiveness of SFBT. Due to insufficient data, ethnicity and socio-economic background were not tested as moderators.

Intervention Characteristics

Regarding intervention characteristics we found that intervention target, treatment modality, and treatment setting significantly moderated the overall effect of SFBT. SFBT was effective for every intervention target that was examined. However, significantly larger effect sizes were found for well-being ($g = 1.74$) and marital functioning ($g = 3.02$) compared to the other intervention targets, such as mental health problems ($g = 0.77$), social functioning ($g = 0.74$), family functioning ($g = 0.55$), school functioning ($g = 0.66$), antisocial behavior ($g = 0.81$) and addiction ($g = 0.82$). Regarding treatment modality we found that group interventions ($g = 1.64$) were more effective than individual ($g = 0.48$) interventions.

The analyses also revealed a larger effect for SFBT in community-based settings ($g = 2.17$) than in educational (school/university) settings ($g = 1.23$), while educational settings did not significantly differ from in- or outpatient clinical settings, correctional, medical, and other settings ($0.45 < g < 1.19$). Whether the SFBT intervention was online or physical, the number of applied SFBT techniques, the type of SFBT technique(s), the length of the intervention, and the number of sessions did not moderate the effect of SFBT. Whether or not the therapist was

specifically trained in SFBT and treatment integrity were not tested as moderators due to insufficient data.

Study Characteristics

Significantly smaller effect sizes were found for TAU comparison groups ($g = 0.58$) than for no treatment comparison groups ($g = 1.59$). Only 2 studies had a design with an alternative active control group other than TAU, which produced only 3 effect sizes for this type of control group. Since we used a lower limit of 5 effect sizes, this category was not examined. Whether the outcome was measured through self-report ($g = 1.21$) or other-report ($g = 0.88$) did not moderate the effect of SFBT. The time after baseline measurement significantly moderated the effect ($B_I = -0.01$). The longer the time between measurements, the smaller the effect.

Publication Characteristics

A trend was found for the publication year of primary studies ($B_I = -0.03$); more recent studies reported larger effect sizes than older studies. Unpublished studies ($g = 0.01$) reported on average smaller effect sizes than published studies ($g = 1.26$). Studies performed in the Middle East had significantly larger average effect sizes ($g = 2.13$) compared to studies conducted in other parts of the world ($0.04 < g < 0.96$).

Publication Bias

Publication bias could not be ruled out, as our bias assessment strategy showed inconsistent results. The adjusted Egger's test showed that publication bias may have affected our results ($b_1 = 6.790$, $z = 11.8586$, $p < .001$), which was also revealed by the funnel asymmetry test that indicated skewness in the effect size distribution ($b_1 = -0.371$, $z = -3.204$, $p < .001$). However, the trim-and-fill method did not produce indications of funnel plot asymmetry (see Figure 3 and 4), and as such did not produce indications of publication or other forms of bias.

Finally, the moderating effect of journal impact factor and the publication year of primary studies were examined. Journal impact factor was not identified as a moderator; $F(1, 454) = 0.352, p = .593$.

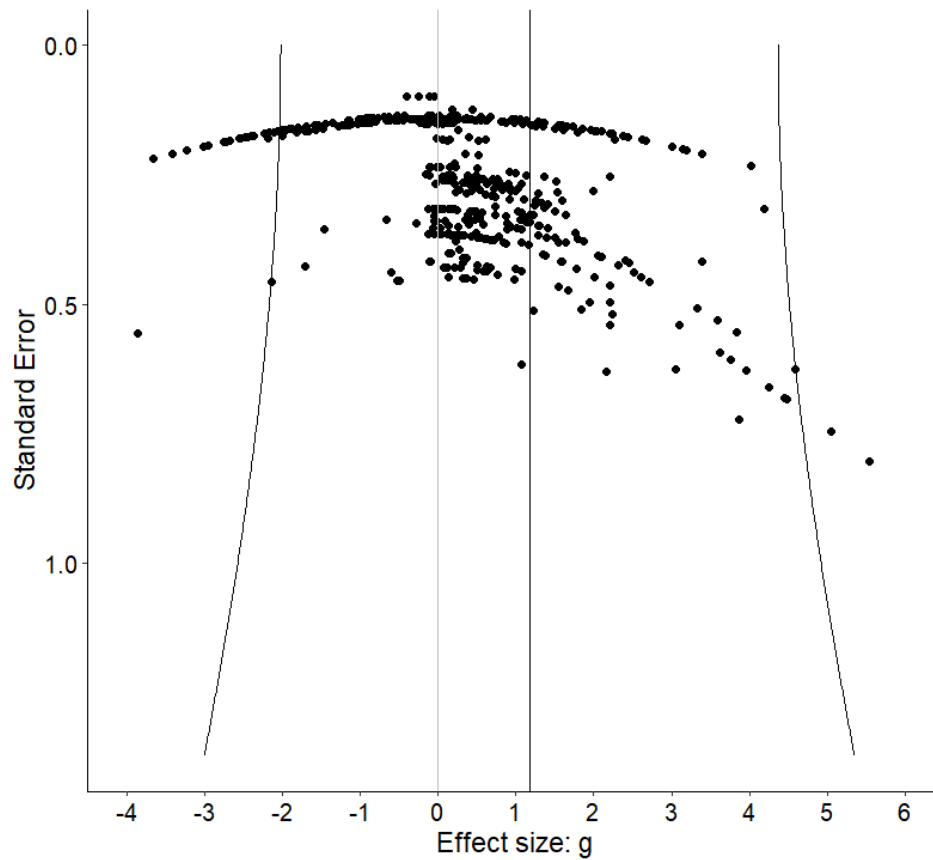


Figure 3. Trim-and-fill funnel plot

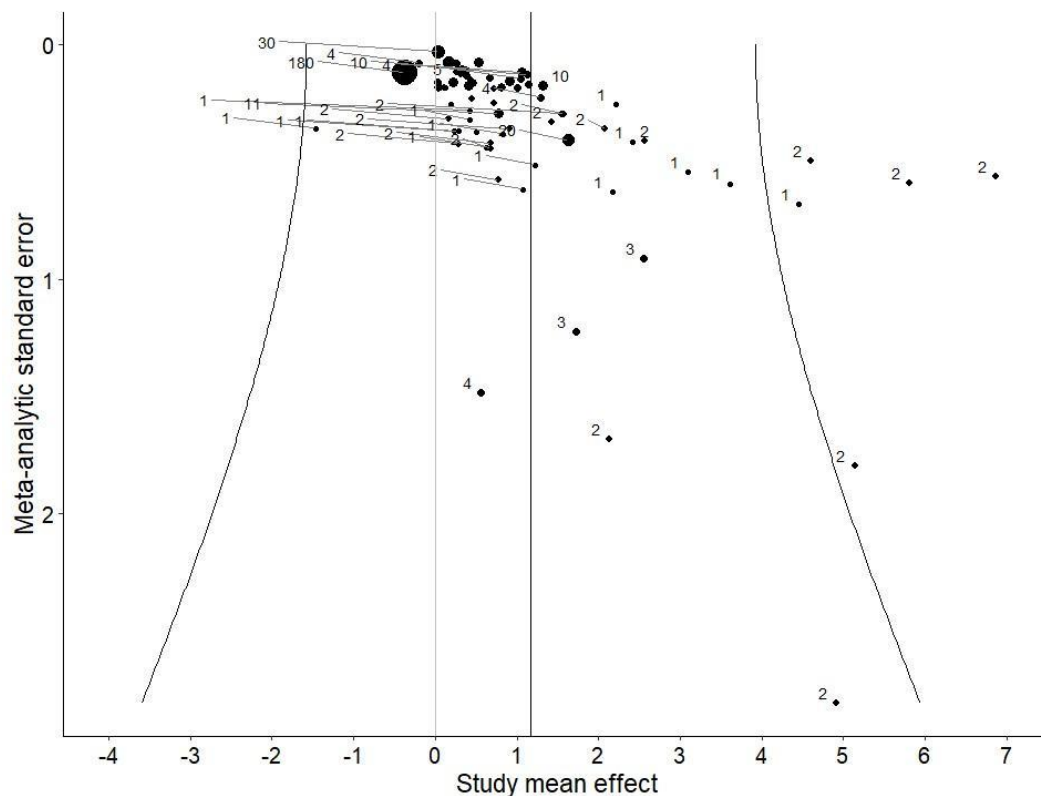


Figure 4. Funnel plot of mean study effects, showing the number of effect sizes per study sample

Multiple Moderator Model

A multiple moderator model was built, which was significant, $F(28, 457) = 1.534, p = .04$. Unique effects were found for TAU (type of comparison group) and couples (type of participants). The intervention target and ‘marital functioning’ outcome were confounded with the ‘couples’ category of participant type, and were therefore not included as separate variables in the model. See supplemental materials for the full results (Appendix C).

Discussion

This study aimed to conduct a comprehensive meta-analysis on the effectiveness of SFBT on psychosocial problems by performing a three-level meta-analysis. Besides estimating an overall effect, multiple participant, intervention, study, and publication characteristics were

tested as a moderator. In line with previous narrative systematic reviews (Gingerich & Eisengart, 2000; Gingerich & Peterson, 2013; Neipp & Beyebach, 2022) and past comprehensive meta-analyses (Stams et al. 2006; Kim, 2008), it was found that SFBT had an overall large effect on psychosocial outcomes, equivalent to a decrease of 59%. Previous reviews reported a range of effects from small to large depending on studies and outcomes examined. Kim (2008) for example, reported only statistically significant small effects for internalizing behaviors and not externalizing behaviors nor marital and family outcomes. Stams et al. (2006) reported an overall small to medium effect and found a larger intervention effect for externalizing behavior relative to internalizing behaviors and marital and family outcomes. In comparison, the present meta-analysis showed an overall large effect across different outcomes that included psychological measures, psychological wellbeing, depression, anxiety, and internalizing and externalizing behaviors. The large effect may be attributed to the inclusion of several additional primary studies that appeared over time and the larger effect sizes in those studies. For example, the Stams et al. (2006) and Kim (2008) studies only analyzed 21 and 22 studies respectively, while this meta-analysis included 79 studies.

Interestingly, in examining the results of this meta-analysis a trend was found for the publication year of the study indicating that more recent studies yielded larger effect sizes. Perhaps greater effectiveness in the more recent studies can be attributed to an improvement in SFBT fidelity and implementation (Perepletchikova & Kazdin, 2005, Goense et al., 2016, Shadish et al., 2000). Unpublished studies (mean $g = 0.01$) reported on average substantial smaller and even non-significant effect sizes than published studies (mean $g = 1.26$), which is in line with the finding that studies with non-significant or negative results are often not published

(Rosenthal, 1995). Whether the study was quasi-experimental or a randomized controlled trial (RCT) did not yield different results.

An important contribution of this study was to perform more thorough moderator analyses, which were not performed in previous SFBT meta-analyses (Franklin, et al. 2023). The current moderator analyses showed that SFBT was effective across different psychosocial outcomes (e.g., general psychological well-being, internalizing and externalizing problems, and family and marital functioning), intervention targets (e.g., mental health problems and school functioning), participant characteristics (e.g., students and parents), clinical and non-clinical samples, setting types (e.g., inpatient, outpatient, and school/university), and continents. This indicates that SFBT is widely applicable for a variety of psychosocial problems in a multitude of contexts across continents. A global application together with ongoing evaluations of SFBT seems therefore warranted.

Comparators, Populations, Settings, and Outcomes

Previous SFBT reviews have shown that SFBT achieves varying results across study designs with different control conditions. Stams et al. (2006) and Franklin et al. (2022) both found that SFBT yielded larger effect sizes when compared to no-treatment control groups and smaller effect sizes when compared to treatment as usual. As expected, smaller effect sizes were found if the comparison group received TAU ($g = 0.58$) compared to no treatment ($g = 1.59$), but still yielding a significant medium effect. In 26 study samples SFBT was compared with TAU. Mostly, TAU consisted of CBT (sometimes combined with techniques of other interventions) or of another problem-focused intervention. In one large study sample (Helsinki Psychotherapy Study) TAU consisted of long-term psychodynamic psychotherapy (LPP) and short-term

psychodynamic psychotherapy (SPP). Since these methods are known to be highly effective, it explains the smaller effect sizes of SFBT if compared to TAU.

SFBT was found to be more effective in the non-clinical client population receiving SFBT for universal, selective, or indicated prevention purposes ($g = 1.50$) than in the clinical population of clients referred to SFBT because of indicated clinical and diagnosed problems ($g = 0.78$). This underlines Bond et al. (2013) who found that SFBT was particularly effective in early intervention in non-clinical populations and in at-risk populations, such as children and adolescents being treated for internalizing and externalizing problems. These findings may also explain why the current meta-analysis found large SFBT effects in community-based ($g = 2.17$) and school/university treatment settings ($g = 1.23$), because studies conducted in these settings had samples of (predominantly) non-clinical clients that may vary in at-risk characteristics and developing mental health issues.

It is important to note that many SFBT effect studies have been conducted in community settings (Kim et al., 2019). Franklin et al. (2023) synthesized the results of 28 RCTs in their meta-analysis of outpatient and community-based settings, and they found that SFBT had medium to large effects on mental health outcomes such as depression and family and psychosocial functioning. Findings of the current meta-analysis, showing larger SFBT effect sizes for school and community settings, aligns with the review of Neipp and Beyebach (2022), who showed that SFBT achieved better results in community and school settings than in formal clinical settings where clients are diagnosed and psychotherapy is offered. As such, the current review provides strong corroborative evidence that SFBT is a very effective community-based intervention, suggesting that SFBT can be a good option in public health initiatives aimed at the prevention of mental health and psychosocial problems.

Previous reviews included either children and adolescents (e.g., Hsu et al., 2021; Karababa, 2024; Schmit et al., 2016) or adults, children, and adolescents without examining to what extent SFBT is effective across age groups (e.g. Eads & Lee, 2019; Franklin et al., 2023; Gingerich & Peterson, 2013; Zhang et al., 2018). The one exception is the meta-analysis of Stams et al. (2006), which showed that SFBT performed better in adults than in children and adolescents. The current meta-analysis found no difference in effectiveness of SFBT between youth and adults, showing that SFBT is an effective intervention for different age groups. Also, we did not find a moderating effect of the gender. It can therefore be concluded that SFBT is equally effective in both men and women, which contrasts findings of Franklin et al. (2022), who found that women benefited more from SFBT than men.

The current meta-analysis showed that group interventions were most effective ($g = 1.64$), which may (partly) explain the significantly larger SFBT effect when wellbeing was addressed ($g = 1.74$), as this is mostly done in groups. The superiority of group interventions over other treatment modalities has been reported in several other meta-analyses and systematic reviews (e.g., Franklin et al., 2022; Neipp & Beyebach, 2022; Stams et al., 2006). There appears to be no doubt that SFBT works well in groups, and results of the current meta-analysis suggest that SFBT may also work well in institutional settings, which aligns with a previous meta-analytic finding that SFBT did perform particularly well in institutional settings (Stams et al., 2006). We do not infer that SFBT is not effective in other modalities such as individual therapy, but the current meta-analysis indicates that the group modality is most effective, which is in line with Neipp and Beyebach (2022), who found that SFBT was efficacious in individual modalities but more effective in groups.

The relatively large effect of SFBT in groups may be explained by the relational, collaborative, and empowering approach of SFBT. In group therapy, participants may feel more connected with others following the same program and facing the same problems (Burlingame et al., 2018). Also, the social interaction within groups may be an especially good fit with the social (co-)construction process and the systemic and interactive approach of SFBT. This core approach of SFBT may also explain the large SFBT effect that was found for marital functioning of couples ($g = 3.02$). This finding is new, as previous studies did not separate marital functioning from other types of family functioning.

The positive SFBT effect on marital functioning may also be explained by the continent where studies were conducted. Studies performed in the Middle East produced larger effects than studies that were performed in other continents. This may be explained by the fact that most studies on marital functioning were conducted in the Middle East, which were predominantly group-based interventions. In three of these studies (Abusaidi et al., 2018; Davarniya et al., 2018; Khadivi & Namani, 2016), only the female partner participated in group therapy, with effect sizes ranging from $g = 0.99$ to $g = 4.45$. In three other studies (Farhady et al., 2014; Jalali et al., 2018; Mirzavand et al., 2016), both partners participated in therapy and larger effect sizes were found that ranged from $g = 2.21$ to $g = 8.21$. This is an interesting finding, which has practical and cultural implications.

First, couple therapy (targeting marital functioning) and the group modality did produce relatively large effects in the present meta-analysis, but these modalities overlap given the substantial number of studies that examined group therapy in the Middle East. Second, when taking into consideration the cultural preferences in the Middle East, the delivery of SFBT in groups may strengthen the client's feeling of community connectedness and shared decision-

making, which is frequently regarded as a valuable quality in Middle Eastern cultures (Chaudhry, 2011). Third, although acknowledging ethnic and cultural diversity, marriage is seen as the pillar of society in the Middle East, defining functional responsibilities within the (extended) family to maintain a blessed household, indicating that marital issues should not be discussed outside the family (Saleh, 2024). Given that SFBT shifts the focus from the problem at hand to the client's empowerment to come up with own solutions, it is plausible that SFBT aligns with cultural and religious objections against the disclosure of personal difficulties that may explain the large SFBT impact in the Middle East. Further research into the differences in SFBT effects across continents and cultures is warranted.

Length of Intervention, Outcome Measurement, and Techniques

The length of the intervention and the number of sessions did not moderate the effect of SFBT. The number of sessions in the included studies ranged from 1-12, indicating that SFBT is a rather brief intervention. Neipp and Beyenbach (2022) also reported on the brevity of SFBT and found that SFBT was on average delivered in about six sessions. The current review underlines this brevity and revealed that a longer or shorter duration of therapy and more or fewer sessions do not seem to make a difference. However, it is unknown yet how treatment duration and session numbers affect long-term effects of SFBT. This requires further research with longer follow-up time than the primary studies that were currently synthesized.

There was no difference in SFBT effect between posttest ($g = 1.23$) and follow up ($g = 1.03$). However, as the time between baseline and subsequent assessments increased, the SFBT effect significantly decreased, which was driven by the relatively long 10-year follow up time in the Helsinki Psychotherapy Study (Knekt et al., 2016). This study was an outlier in the effect size data, and we found in a post-hoc sensitivity analysis that the moderating effect of time

between baseline and subsequent assessments was no longer significant when the Helsinki Psychotherapy Study was excluded. This non-significant effect was also found when the outlying follow-up times of the Helsinki Psychotherapy Study were recoded into the normal range.

The number of techniques applied in therapy – that ranged from 1 to 7 in the included primary studies - did not moderate the effect of SFBT. This is partly in line with findings of Franklin et al. (2017; 2023) who discussed that it may not only be the number of techniques that affect treatment effectiveness, but also the type of techniques that are applied. However, we did not find a moderating effect of specific SFBT techniques in the current meta-analysis.

Since some of the moderating effects that we identified may overlap, a multiple moderator model was examined in which all coded variables identified as a moderator in the bivariate moderator analyses were included. This showed that type of comparison group (TAU) and the client group of interest (i.e., couples receiving treatment to improve marital functioning) were the only moderators that remained significant after controlling for all other moderators. It may be concluded that these two moderators exerted the most consistent influence on the effectiveness of SFBT, which may imply that SFBT is particularly helpful in treating couples by improving marital functioning, especially in groups, but that SFBT still has a substantial impact on other client modalities and other outcomes. Moreover, SFBT remains an effective intervention when compared to TAU.

Limitations

The current meta-analysis has several limitations. First, we may have missed primary studies that met our inclusion criteria, and we were limited by the amount of information that could be extracted from the studies. Several variables of interest, such as training of the therapist in SFBT, treatment integrity, and socio-economic background of the participants, could not be

coded due to missing or insufficient reporting in the primary studies. As a result, the influence of training therapists in SFBT and treatment integrity on the effectiveness of SFBT could not be tested as moderators. Previous research has shown no difference may exist in effectiveness regarding symptomatology between trained and untrained therapists (Berman & Norton, 1985; Herschell et al., 2010). There is evidence that high levels of treatment integrity, as measured by valid and reliable instruments, contribute to positive clients outcomes (Fryling et al., 2012; Goense et al., 2016). However, studies generally show conflicting results regarding the effect of treatment integrity on the effectiveness of interventions (Perepletchikova & Kazdin, 2005), which is likely due to the fact that studies hardly use systematic methods to measure treatment integrity (Perepletchikova et al., 2007).

The included primary studies barely reported on the ethnicity and education/ occupational levels of the participants, neither on information on income and use of social services. Validated socio-economic status (SES) indices were also generally missing. This precluded moderator analyses of ethnicity and socio-economic status of participants. Cultural minoritized populations on average deal with relatively many stressors (Williams, 2000). Many culturally minoritized groups also have a low SES, which in general is a risk factor for developing mental health disparities and distress (Knifton et al., 2020; Peverill et al., 2021). A combination of these stressors could contribute to an accumulation of problems, which may negatively affects SFBT effectiveness.

A second limitation is that some moderator analyses had low statistical power due to a disproportionate distribution of studies and effect sizes across categories (Cafri et al., 2010; Hedges & Pigott, 2004; Pigott, 2020). In these cases, the generalizability is limited (Cafri et al.,

2010; Pigott, 2020), and the results of these moderator analyses should therefore be interpreted with caution (Cafri et al., 2010; Pigott, 2020).

A third limitation is that since only studies published in English, Dutch, French and German were included, a number of studies published in non-Western cultures may not have been identified in the search strategy. This may have biased the results that we obtained in testing the continent of studies as a moderator of SFBT effectiveness.

A fourth limitation is that our bias assessment strategy produced some indications for bias. However, for interpreting bias assessment results it is important to acknowledge that all available methods for determining publication bias have their shortcomings (e.g., Lin & Chu, 2017; Sterne et al., 2011; Thornton & Lee, 2000). For instance, methods based on the symmetry of effect size distributions assume homogeneity of effect sizes, which is often violated in meta-analyses (Nelson, 2015; Sterne et al., 2011). It is still unclear when effect size distributions may be considered homogeneous, so that publication bias analyses produce meaningful results (Egger et al., 1997). It may be that the currently identified heterogeneity rather than publication bias may drive an asymmetric distribution of effect sizes (Sterne et al., 2011). Nevertheless, as publication bias cannot be ruled out, the current results should be interpreted with caution.

Finally, there is a question of what statistical methods yield the most robust and valid findings. There is ongoing discussion about how the statistical dependency in effect sizes can be best modeled in meta-analysis. Assink and Wibbelink (2024) emphasize that robust estimation methods (Robust Variance Estimation, RVE) seem to have advantages in case of model misclassification. However, RVE requires a rather large number of studies to obtain valid results and the small-sample corrections that have been developed to address this may suffer from inflated or below-nominal type-1 error rates (Assink & Wibbelink, 2024). Notably, Van den

Noortgate et al. (2013) argued that a hierarchical three-level model of effect sizes is adequate to account for all dependency (see Assink et al., 2019 for example). It was therefore decided to analyze the effect sizes of the current meta-analysis in a three-level model.

Recommendations for Future Research

First, it is important that primary studies report with better quality. If studies report more elaborately on the same characteristics, more extensive moderator analyses can be performed in secondary research so that moderating variables can be better identified. In addition, more research is needed into the factors that could not be coded for only a few effect sizes, such as the intervention target (particularly family and social functioning) and treatment modality (particularly the family, mixed and online modalities). A lack of research into these factors may lead to an inaccurate view of the effectiveness of SFBT (Cafri et al., 2010; Hedges & Pigott, 2004). Third, it is important that primary studies be registered before they start so that publication bias can be better assessed (Thornton & Lee, 2000). Finally, SFBT offers a first step in personalizing treatment, which may improve client motivation and the therapeutic relationship. Research showed that these factors contribute to the effectiveness of treatment for psychosocial problems (Heinonen et al., 2022; Roest et al., 2022).

Conclusion

The current meta-analysis provides empirical evidence that solution-focused brief therapy (SFBT) has a large effect on a range of psychosocial outcomes. Compared to previous reviews, the current meta-analysis synthesized a large number of primary studies including those that appeared in recent years. Moreover, a substantial number of variables could be tested as moderators of SFBT treatment effectiveness which was not done in previous reviews. To our knowledge, a meta-analysis on the effectiveness of SFBT has not been done on this scale which

makes the current results highly relevant. However, important to address is that caution should be exercised in interpreting these results, as they refer to the group level. Future research is needed to unravel what works best for individual clients. Nevertheless, the current results give good reasons to argue that SFBT may be the effective, brief, low-intensity and low-cost form of therapy that addresses expensive and understaffed mental health care systems worldwide. SFBT is also an answer to the need for evidence-based and patient-oriented care. We therefore recommend to use SFBT when it meets a client's needs, context, and psychosocial problems. This will contribute to a worldwide decrease in psychosocial problems.

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Articles with an asterisk (*) are included in the meta-analysis and discussed in the text.

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