The Arts in Psychotherapy 64 (2019) 84–94

Contents lists available at ScienceDirect

The Arts in Psychotherapy

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

Research Article

Sandplay therapy: An overview of theory, applications and evidence base

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ARTICLE INFO

Keywords:
Sandplay therapy
Applicability
Efficacy and effectiveness
Jungian psychotherapy
Analytical psychology

ABSTRACT

Sandplay Therapy (SPT) is a psychotherapy method utilized worldwide, not only in Western countries, but also in Asia and Latin America with an extensive increase in growth over the past 15 years. The nonverbal approach of SPT is especially applicable in working with children, and with adults with trauma, distress, disabilities, and migration issues. This study provides an overview of the theory and practice of SPT in individual and group settings, its application to different groups of clients and mental health problems, and the state of evidence. A systematic search found 16 RCTs and 17 effectiveness studies, which found significant improvements with moderate effect sizes for a variety of child and adult mental health problems. Although further research is warranted, the current state of evidence highlights a range of potential benefits of SPT in clinical practice. SPT seems to have a potential for the treatment of clients with traumatic stress, disabilities or language problems, which are difficult to treat with conventional psychotherapy methods.

Sandplay Therapy (SPT) is a psychotherapeutic method applied in the work with children, adolescents, and adults, with a theoretical background in psychodynamic theories of play therapy, and especially in CG Jung's analytical psychology (Jung, 1990). SPT developed out of the background of play techniques in the psychoanalytic treatment of children. A predecessor was Margaret Lowenfeld's "World Technique", which was later taken up by Dora Kalff, who formed what is known today as Sandplay Therapy. A tray filled with sand and a wide variety of play figures is offered to the client to create a picture of his/her inner world (Mitchell & Friedman, 1994). It is assumed that SPT, like other creative therapy methods, helps the clients to find expression for their current psychological problems, unconscious themes and conflicts. The sandtray picture makes unconscious material accessible (Kalff, 1989), and. the act of expressing conscious and unconscious material and creating a coherent form for what they are experiencing is considered to be therapeutic in itself. The method is used in the work with children as well as adults, but especially for child psychotherapy SPT has become a very widespread method also outside the context of Jungian psychotherapy. Due to its nonverbal approach and to cultural conditions in a number of countries SPT has become a popular method, e.g. in Latin America (Brazil, Uruguay, Mexico) and Asia (Japan, China, Taiwan, Korea, Indonesia). The professional societies of SPT in Japan, Korea and China, for example, are among the largest in the field of psychotherapy worldwide. SPT is also widely applied in the psychotherapeutic work with children and adolescents in Western countries, Europe and North America, also used by therapists with no psychodynamic background. In recent years, there has been an increase in the application of SPT to victims traumatized by natural disasters (Tsunami, earthquakes) with large numbers of clients treated (Chen & Shen, 2009; Pattis, 2011). Thus, on a global level, SPT is a widely applied psychotherapeutic method worldwide. Given this widespread application, it is surprising that the applicability and evidence base of SPT has not yet been subject of a systematic review; publications on SPT are underrepresented in scientific journals. This study therefore attempts to fill this gap by providing a thorough overview and description of the method, its theoretical background, the applicability for different mental health problems and client groups, and the evidence base.

Sandplay therapy: theory and practice

Historical development

Anna Freud (1927) and Melanie Klein (1932) were the first to develop psychoanalytic treatment approaches for children, and both used play techniques. There was controversy between the two regarding the relationship of play and of interpretation of the material. A. Freud was careful with the introduction of interpretation and only used interpretation after the child had developed its full play scenario, whereas

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https://doi.org/10.1016/j.aip.2019.04.001
Received 22 December 2017; Received in revised form 5 March 2019; Accepted 25 April 2019
Available online 26 April 2019
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Klein used intensive and frequent interpretations, based on her theory of pre-oedipal development (von Gontard, 2007). Winnicott (1971) took a critical stance towards the practice of interpretation by Klein and emphasized the role of play as being a method in its own right. In his view play occurs in the context of the transitional space, and therefore is seen as a source of creativity and an expression of the true self; because it combines the experience of inner objects with control over real objects it provides maturation. So early in the development of play techniques two opposing viewpoints became visible, one emphasizing the importance of frequent interpretation, the other emphasizing the therapeutic power of play in itself without the necessity of interpretation. Initially independent from these developments, the British child psychiatrist Margaret Lowenfeld (1935), 1939) developed a play technique for child psychotherapy, called “World Technique”, which was based on H.G. Wells’ (1911) early publication “Floor Games”. She was the first to use a tray of sand and selected play figures, and used this as a tool to alleviate the communication between child and therapist. She did not interpret the symbols in the play, but aimed at giving a means to the children to express their emotional and mental state without any interpretation from an adult, which gave access to preverbal forms of experience. At a conference in Paris in 1937 where Lowenfeld had introduced the World Technique, CG Jung was in the audience, who later supported Dora Kalff to take up this technique in the development of SPT (Mitchell & Friedman, 1994).

Dora Kalff’s sandplay therapy

SPT was founded by Dora M. Kalff (1989), 2003), who trained with Jung, but was also personally acquainted with Lowenfeld and had trained for some time with Winnicott (Mitchell & Friedman, 1994). As she was the first in the Jungian community to work with children, in search of an appropriate method Kalff took over central elements of Lowenfeld’s “World Technique” and combined it with a coherent model of Jungian symbol interpretation; an additional root can be found in Eastern contemplative traditions, which focus on providing space for spontaneous creative acts in healing processes (M. Kalff, 2007; Senges, 2001; Turner, 2005a; Cunningham, 2013). As Jung was the first to use creative techniques in psychotherapy, e.g. painting, this paved the way for the development of SPT. In Jung’s view the unconscious contains constructive forces (Jung, 1990). The unconscious is seen as containing not just a personal sphere but also a collective part which contains the archetypes, universal psychological structures that influence the formation of the personality. Archetypal elements come into mind by way of symbols which contain condensed information and can be used as constructive elements in the therapy process. The unconscious is seen as a helpful stance that supports ego consciousness in integrating split-off parts of the psyche (Samuels, 1985). The unconscious in this process produces symbols and presents them to ego consciousness by way of dreams, fantasies, and spontaneous creative acts. Therefore, different kinds of creative methods are used to give the unconscious the possibility to express itself. The use of sandplay is one method to enable the client to express unconscious material. Kalff’s approach was very similar to Lowenfeld’s in that interpretation was not considered to be important, often there is no interpretation at all of the play process or its symbols. SPT emphasizes the spontaneous and dynamic qualities of the creative experience itself. It offers a container for the non-verbal and symbolic expression of the client’s inner world in the process of playing, in what Kalff called the "free and protected space" which also includes the therapeutic relationship. The therapist takes a very open and nondirective attitude, being present without judgment or interpretation, while the client is free to create whatever he/she wants (Turner, 1994).

Theoretical models of the therapy process in SPT

(Weinrib, 2004) point out that this approach enables clients to express emotional content, conscious as well as unconscious, to make it visible and accessible for reflection. On the other hand in the process of transforming emotional content into a sandtray picture, clients can directly modify and change their inner thoughts and emotions, restructuring their inner world and establishing order. The SPT process is characterized by a number of sessions in which the client works on his/her psychological problems by creating a series of pictures. Often in such processes, certain elements and symbols appear repeatedly in the pictures, but the structure of these changes over the course of therapy. As the therapy begins in an unstructured way, it provides opportunities for the clients to free themselves from and express negative and suppressed emotions, and feel accepted in the presence of the therapist. Kalff (1989) refers to play as part of the self-regulating capacities of the psyche; here also Winnicott’s (1971) influence becomes visible. The experience of touching the sand and the figures while creating the picture is a pleasurable sensory experience and fosters regressive processes. On the other hand the creative process is contained by the limitations of the sandtray and by the containment provided by the therapeutic relationship, thus regulating fears of being overwhelmed by emotion. An advantage of SPT is that not a small number of clients become defensive when asked to paint a picture, but is more willing to cooperate when offered to work with the sandtray. Play, as a natural phenomenon and part of the self-regulating functions of the psyche, has the ability to regulate unresolved conflicts and emotions and immerse into a process of restructuring and re-organizing the inner world (Ammann, 1991; Pattis, 2011). The sandplay process thus provides the conscious personality with means to address conflicts, traumas, losses, etc., as well as the psychic content necessary to further personality development.

Practical aspects

In sandplay, the client creates a three-dimensional scene in a tray filled with sand (30 × 20 × 3 in./57 × 72 × 7 cm) using a selection of miniatures, as this dimension allows the client and therapist both to view the entire tray in one glance without moving their eyes and heads. The interior of the tray is painted blue to give the impression of water when the sand is moved aside, clients can add water to mold the sand or create lakes and rivers (Mitchell & Friedman, 1994). The therapy room should contain a wide variety of miniatures. Homeyer and Sweeney (2011) give an overview of the figures that can be used: human beings, animals, buildings, vehicles, plants, fences, natural objects, e.g. stones, fantastical beings, spiritual symbols, landscapes, etc. Usually there are two stages to the sandplay process: the first involves the construction of the picture; after the completion the client may share a story or their ideas about the sand picture, and the therapist may ask for additional information such as personal associations on figures or the scene. Regarding the topic of interpretation, in Kalff’s classical approach therapists were asked to use interpretation only very cautiously. As was pointed out above, the question of whether to use interpretation or not was a conflicted topic in play therapy from the beginning (von Gontard, 2007). In Jungian analysis, when it uses SPT as a subtechnique, a continuum can be found with, on the one pole, a discursive style of therapy as is usual in psychoanalytic psychotherapy, in which a sandplay picture is used as an initial creative impulse which is then discussed and interpreted, and, on the other pole, a totally nonverbal, creative work without any questions, comments or interpretations from the therapist, in which the therapist functions as a witness and container for the psychological process of the client (Ammann, 2001).

Meanwhile a variety of approaches have developed using miniatures and a sand tray (Turner, 2017). These methods, termed Sand Tray Therapy include, but are not limited to those that emphasize “here and now” conscious awareness of what has been created and often involve directives and suggestions made by the therapist and/or interpretation (Turner, 2017). The present overview focuses on the classical form of Sandplay Therapy as it was developed by Dora Kalff (1989), 2003) and

as it is reflected in a number of treatment handbooks which can be subsumed under the term Sandplay Therapy (Homeyer & Sweeney, 2011, Hong, 2011, M. Kalff, 2007, Turner, 2005b, 2017, Cunningham, 2013, Mitchell & Friedman, 1994, von Gontard, 2007), which provide guidelines for the practice of SPT[1].

Recent developments

A number of empirical studies focusing on the process of therapy in SPT found evidence which supports this model of therapeutic change (Ramos & de Matta, 2008; Wang & Zhang, 2014; Zhang & Zhang, 2012). Turner (2005b, 2017); Balfour (2013) and Freedle (2017) discuss the connections of SPT and research in the neurosciences and provide theoretical models of therapeutic change via neuronal integration. Recent developments combine the classical approach of SPT with narrative techniques (Unnsteinsdóttir, 2012) or other art therapy methods Simon (2008) and extend the use of SPT, e.g. to the work with couples and families (Xu & Zhang, 2007).

Pattis (2011) developed Expressive Sandwork as a community-based treatment for application in vulnerable communities, usually children, e.g. victims of collective traumatization. It is a non-verbal psychosocial treatment offered in a group setting and consists of 12 weekly sessions of one hour each, in which the clients is offered the opportunity to create their world in an individual sandbox. This occurs in silence and their play is not interpreted. The same adult volunteer, mostly from the same community as the children, witnesses each child's process each week. This approach is frequently applied in areas hit by natural disasters, where there is a high number of traumatized persons and a strong need of psychosocial support, and can easily be implemented.

International dissemination of SPT

Originally part of Jungian psychotherapy, SPT has become a psychotherapy approach in its own right, and has been disseminated throughout the world, which shows in the 1985 founding of the International Society for Sandplay Therapy (ISST). As noted above, in Latin America and especially in Asian countries SPT has become a widely applied psychotherapy method. Already in 2010, Zhang, Zhang & Sun (2010) described a strong growth of the application of SPT in China in the preceding decade, in which the use of SPT was expanded to schools, hospitals, prisons and counseling training institutions; also the classical form of SPT was adapted to new settings, such as groups and family therapy. There is also intensive research in China, with one focus on the effectiveness of SPT for different groups, the second focus on identifying characteristics of sandplay pictures for a number of mental health problems and disorders. The same refers to Japan and Korea. Why has SPT become so popular in Asia? SPT was first introduced to Japan in the 1970s in combination with Jungian psychotherapy (Kawai, 2010). In Japan there is a long historical tradition of creating miniature worlds in sand fields and gardens; in fact the Japanese word for SPT translates as 'sand garden box'. So for Japanese clients the invitation to create a picture in a sandtray is culturally self-evident. As for the strong cultural connections between Japan, Korea and China, the same applies, in general, to these other countries. Also psychotherapy in China and Korea was introduced initially from Japan. Another reason for the international dissemination of SPT maybe it's nonverbal approach, which makes it independent from cultural backgrounds. In Asia, even psychodynamic therapies seem to focus less on conscious, verbal reflection, as is usual in Western countries (Kawai, 2010). As a nonverbal method SPT can build a bridge to clients who have problems to express themselves; this makes it popular in the work with children, but also with trauma victims or clients suffering from disabilities, and in general creates a low threshold for initiating psychotherapy.

Application of SPT to mental health problems and disorders

As for the above-mentioned reasons, SPT is frequently applied to treat child mental health problems. SPT was successfully applied to treat externalizing and aggressive behavior problems (Han, Lee, & Suh, 2017), attention deficit hyperactivity disorder ADHD (Wang, Hang, Zhang, He, & Wang, 2012), traumatization (Ramos & de Matta, 2018), emotional and attachment problems in connection with family problems such as alcoholism, separation from parents or parental divorce (Yang, 2014, Yoo, 2016, Plotkin 2016); addictive behaviors (Kim & Kim, 2015), test anxiety (Chen, Xu, & Zhang, 2006), social behavior problems and low self-esteem, and juvenile delinquency in adolescence (Sim & Jang, 2013). Often SPT is applied here in school contexts, in some cases by visits from therapists to elementary or high schools. Also, as noted above, SPT is well applicable to clients with disabilities, e.g. autism spectrum disorder in children (Lu, Peterson, Lacroix, & Rousseau, 2010), or traumatic brain injury (Freedle, 2007) and dementia in adults. Suri (2012) gives an overview of applications of SPT to individuals with dementia. In adults, SPT has been applied to clients suffering from depression (Osumi, Aizawa, Ninomiya, Miyasato, & Yamaguchi, 2010), generalized anxiety disorder (Foo, Ancok, & Milfayetty, 2017) and other forms of anxiety (Lee & Kowen, 2016), test anxiety in university students (Chen et al., 2006). Because of it's non-verbal approach, in a number of countries SPT is increasingly applied to groups of immigrants and refugees, to support these clients in overcoming problems caused by migration and eventually traumatization (Jang & Kim, 2012). SPT is especially useful in these contexts as it enables nonlinguistic communication and the expression of the inner world of the client with images and symbols in the medium sand. SPT is widely used in a number of countries for the treatment of trauma and PTSD, namely in the case of survivors of natural disasters. As in those cases there are often large numbers of victims with posttraumatic symptoms. SPT is often applied in a group setting, e.g. for earthquake survivors in Nepal (Hwang & Kim, 2017) and China (Zhang, Liu, & Zhang, 2010), or victims of tsunamis (Lacroix, Rousseau, Gauthier, Singh, Giguière, & Lemzoudi, 2007). As Ramos & de Matta, 2018 point out, if victims are not treated or other therapeutic techniques in the treatment of traumatic symptoms do not result in significant improvement, trauma may become sedimented in subcortical structures and therefore remain unconscious and non-verbalized. Non-verbal techniques may represent the most effective treatment strategy without the risk of re-traumatization. An interesting finding is that, in contrast to the above-mentioned mental health problems, SPT when applied to a physical problem (bronchial asthma) produced no improvement Toyoshima (1987).

Assessment

Instruments developed for a systematic analysis of sandplay pictures

There are a number of handbooks and manuals to systematically interpret symbols, images and structures in sandplay pictures (e.g. von Gontard, 2007). Additionally, a number of standardized systems and methods have been developed, also for the use in research (e.g. Senges, 2001). Jones (1986) developed the Sandtray Worldview Scale, which reliably identifies different levels of cognitive development in children from sandtray pictures. Ramos & de Matta, 2008 developed a standardized method for classification and categorization of sandplay pictures for the use in research and data analysis. Probably the most well-known system is the Sandplay Category Check (SCC) List developed by Grubbs (1997). The SCC contains a detailed listing of all known modes of

[1] All of the empirical studies reported below which investigated the effectiveness of SPT refer to the classical form as founded by Dora Kalff in the sense of the definition given here, which means that therapists usually abstain from giving any interpretations.

expression in sandplay creation with a focus on patterns of change from one sandtray to the next. The SCC covers three essential aspects of sandplay: (a) the thematic content of the scene and the process involved in creating it, (b) the creator's personal story and descriptive words, and (c) the progressive or regressive changes that occur from one scene to the next (e.g., harmony and unity between parts and the whole). The SCC is composed of 20 categories, each containing a present/absent checklist or fill-in: objective/quantitative listings (i.e., figures used, setting, animals used as people) and inferential/interpretive listings (i.e., self-nurturing expressive play, no coordination of scene). To use the SCC, the researcher quietly checks or fills in some of the categories while the sandtray is being made, such as comments made about the scene and figures used. Other categories, mainly those requiring further thought, are checked after completion of the picture.

Characteristics of sandplay pictures of clients with special syndromes and disorders

In the research on SPT, characteristics of symbols and patterns in sandplay pictures connected with certain psychological syndromes and disorders have become a field of intensive study. Hohmeyer & Sweeney (2011) report a number of studies (partly unpublished doctoral dissertations) in which it was possible to differentiate clinical from non-clinical cases by judgment of the sandtray pictures. In a study on 20 normal, delinquent, and emotionally disturbed 10 to 14-year-old boys, judges were able to differentiate the groups with a highly significant interrater reliability (Fuiji, 1979). In a study on 62 children from Sri Lanka (age 5–18) orphaned by war, it was possible to clearly differentiate between nonproblematic and at risk groups from judging the sandtray pictures (Chi-square analysis significant, $p < .002$). In a study of bereavement in children having lost close relatives ($n = 60$, age 5–12), children were investigated using specially created indexes, e.g. for danger and death, death preoccupation etc. Chi-square analysis found significant differences between the clinical and the control group, e.g. the bereaved group had 64% of children who displayed indicators of danger and death, while only 37% in the non-bereaved group. Two groups of Chinese researchers have published extensively on this topic in the last decade. The studies follow a systematic protocol, by which a group of subjects with symptoms is identified through applying standardized measures (mostly SCL-90), and their sandplay pictures are compared to those of the control group. The sandplay works are investigated using standardized coding tables for categories of figures and symbols, and the usage frequency of these elements is analyzed by Chi-square test and logistic regression analysis. For example, Tan, Zou, Zhang, & Wang (2013) compared a group of 36 students with clinically significant anxiety scores in SCL 90 to 36 students in a control group:" In the use of toys, compared with the control group, the anxiety symptoms group had lower usage frequency of human beings (19.4% vs. 80.6%), flowers (33.3% vs. 63.9%), grass (33.3% vs. 80.6%), trees (278% vs. 72.2%), houses (38.9% vs. 72.2%), commercial buildings (5.6% vs. 27.8%), food and fruits (11.1% vs. 41.7%), lakes (30.6% vs. 63.9%),rivers(11.1% vs.47.2%) and bridges(30.6% vs.61.1%). The anxiety symptoms group showed more un-touch attitude (61.1% vs. 22.2%), imbalance layout (52.8% vs. 2.8%), single perspective image display (47.2% vs. 11.1%), monotonous color (36.1% vs. 13.9%), and lack of a self-image (50% vs. 8.3%)… Multiple regression analysis found a medium correlation of these patterns with the anxiety symptoms ($\beta = 34.76,31.55$; $p < .05$)" (p. 235). Comparable results with significant correlations were found for clients with traumatization (Chen & Shen, 2009), depression (Tan, Shen, Li, Yu, & Wang, 2012), hostility (Tan, Wu, Guo, & Lin, 2009) and aggressiveness (Zhang & Du, 2009), obsessive-compulsive disorder (Tan & Shen, 2010), borderline personality disorder (Li, Iang, & Shen, 2009), ADHD (Zhang, Zhang, & Whang, 2013), somatization syndrome (Tan, Shen, Li, Yu et al., 2012). Tan, Yu, Yang, Qin, & Lei (2013) also found evidence for sandplay pictures differentiating between extraverted and introverted personalities. The researchers summarize these findings as pointing to the fact that sandplay may be a valuable tool for assessment in clinical psychology; on the other hand this demonstrates the validity of sandplay in expressing the inner world and also characterisics of the psychoathology of the client. This replicates findings from an earlier study (Aoki, 1981), which found a good retest reliability of sandplay pictures in identifying the psychopathology of the client. The research groups also succeeded in developing a questionnaire identifying reliably images pointing to a healing experience in SPT. The 22 items were factor-analyzed and a three-dimensional model structure was found having good validity and reliability (Li & Shen, 2012). Grubbs (1995), in a comparative study, found systematic differences and characteristics of sandtray pictures of sexually abused children compared to a control group; in this study the above-mentioned SCC was applied to investigate symbols and structure of the pictures.

Evidence base of SPT

There are only a small number of empirical studies published investigating the effectiveness of SPT in English language journals; there are a considerably larger number of publications especially in Chinese and Korean journals. Unfortunately, the large number of case studies published in the West and in Japan does not apply standardized methods or forms of reporting results. There are some preliminary overviews focusing partly on the method and partly on research (Bradway, 2002, von Gontard, 2001, Zhou, 2009), but these do not fullfill the criteria for a review (e.g. reporting search criteria and results).

Method for review

For conducting a systematic search for empirical studies investigating SPT a set of criteria for inclusion was defined following the PRISMA checklist. Thanks to the support from Japanese colleagues it was possible to translate and include studies originally published in Japanese, Chinese and Korean, which makes this overview the first to include studies in Western as well as Asian languages. Eligibility criteria: minimum of 15 participants; minimum of 5 sessions; application of SPT in an individual or group setting; application to mental health problems; clearly defined quantitative research design with standardized measures; clearly reported outcomes including measures of change (significance test, effect size etc.); publication in scientific journals, books or online ressources. The search was conducted in online databanks (Eric, ProQuest, Psyclit, Psyndex, PsycInfo, Fis, Deutscher Bildungsserver) using the following search terms: Sandplay Therapy (various spellings), efficacy, effectiveness, outcome, empirical study. Additionally a search was conducted in the following journals: Journal of Sandplay Therapy, the Journal of the German society for SPT, The Arts in Psychotherapy, International Journal of Play Therapy, Japanese Archives of SPT, Journal of Symbols and Sandplay Therapy (Korean), Psychological Science (Chinese), Chinese Journal of Clinical Psychology; Chinese Journal of Mental Health; and by inquiry to professional societies (e.g. International Society of Sandplay Therapy ISST). The search was conducted in September/October 2017 and produced 147 studies (after removal of duplicants), of which after screening 58 studies were found relevant (i.e. empirical studies). 33 fulfilled the criteria (excluded were e.g. qualitative studies) and were included in the synthesis (see Fig. 1): 16 RCTs and 17 effectiveness studies (quasi-experimental or pre-post-test one group designs). Only a small number of the studies reported effect sizes. In the majority of the studies, a number of 10–12 sessions was administered to the clients in a weekly format.

RCTs

In all of the following studies, subjects were randomly assigned to

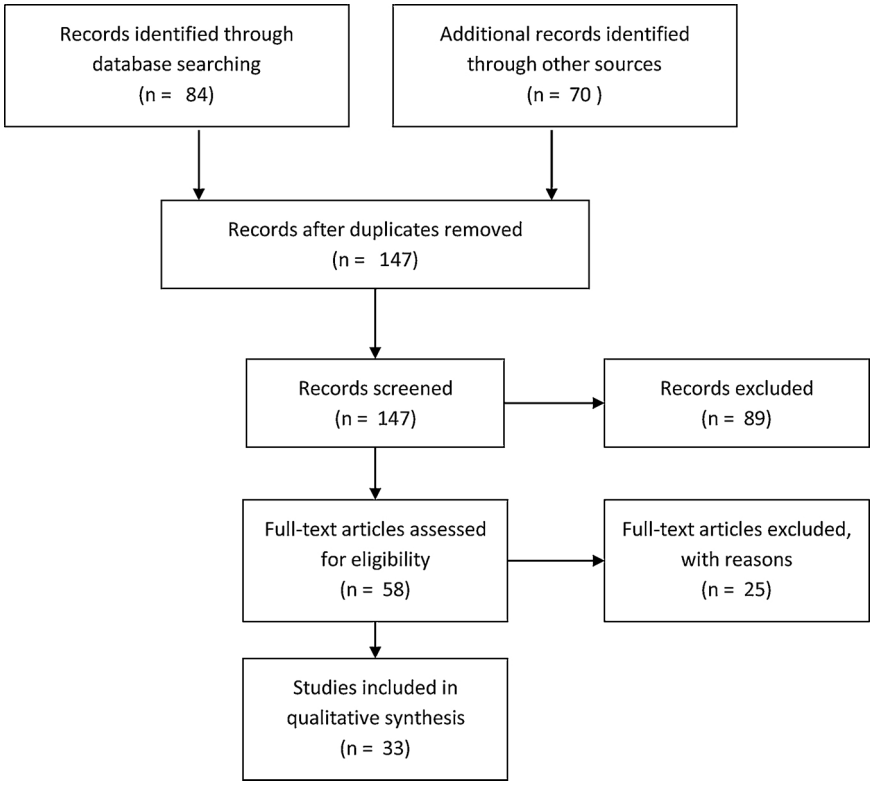

Fig. 1. Flow Diagram (PRISMA) documenting the search process.

the experimental and control groups in equal parts, and control groups received no treatment. All of the studies report significant improvements in the treatment groups on the dimensions measured versus no improvements in the control groups.

Child and adolescent mental health problems

All of the studies reported here were conducted in China or Korea. The mental health problems treated range from ADHD, anxiety, behavioral problems and addiction to traumatization connected with refuge and migration issues and other social problems; in some studies the problems of the children were seen to be connected with problems in the family, e.g. alcoholism, or other environmental conditions. The diagnoses and the burden of distress in the subjects was measured with widely used standardized measures, often in a translated version (Table 1).

Some of the studies took great care in securing a high methodological standard: Wang et al. (2012) investigated the effects of a 12 session treatment program of SPT to children with ADHD (n = 30). ADHD diagnoses were made according to the DSM-IV after screening 1257 children (age 7–14), and the mentally retarded children were excluded with the Raven Standard Progressive Matrices Test (SPM). Han, Lee, & Suh (2017) conducted a study with children (age 4–5 years, n = 20) at a childcare center with externalizing behavioral problems, to determine whether SPT was effective in reducing aggression and negative peer interactions. The experimental group received 30 min of SPT twice a week at their childcare center, for a total of 16 sessions. The control group did not receive any therapy or placebo treatment. Mann-Whitney-Tests were conducted to confirm the homogeneity between the two groups prior to the initiation of the program. Sim and Jang (2013) investigated the effects of SPT on the aggression level of female juvenile delinquents (n = 18) put into juvenile reformatory. To assess aggression, the subjects not only self-reported the Buss & Durkee Hostility Inventory (BDHI), but additionally emotional processing was assessed by brain imaging over the course of therapy. The experimental group's brain waves were tested bi-weekly prior to and after each session and their process of change was traced. The results show that SPT was effective in reducing the aggression of female juvenile delinquents and positively raising the attention index related to aggression.

Adult mental health problems

Apart from investigating the effects of SPT on common psychological disorders like anxiety or depression, many of the studies in this section focused on mental health problems connected with family or cultural contexts; e.g. Foo et al. (2017) studied a sample of Indonesian women with GAD on the background of the marginalized position of women in Indonesian culture (Table 2).

A number of studies in this section additionally explored aspects of the therapy process. Wang and Zhang (2014) explored the effect of group SPT on psychological resilience of college students with high distress levels (n = 19). Additionally characteristics of the therapy process were assessed by evaluating the sandplay pictures after each session, in combination with a self reflection questionnaire. Qualitative analysis of these data found mediating effects of self-respect, stress coping, social support and interpersonal skills in the experimental group, contributing to the improvement in resilience. The authors conclude that group SPT is a feasible way to improve psychological resilience in college students, in which self-reflection may have a moderating effect. Jang and Kim (2012) investigated the effect of SPT on anxiety and loneliness in migrant women in Korea. There was a significant decrease of anxiety in social interactions and loneliness in the treatment group, and an increase in 'positive self-expressions' and 'positive expressions about others'. The increase in positive self expressions was found to follow a continuous pattern, starting with the first session. The authors believe that this process was supported by SPT stimulating the participants to identify their emotions, which then could be shared in stories with group members. SPT therefore can be seen as a vehicle for identifying and then communicating emotions and thus fostering the practice of social interactions, which together

Table 1
Randomized Controlled Trials (child and adolecent mental health problems).

Study	N	Diagnoses	Measures	Number of sessions (group/single)	Results	ES
Wang et al. (2012)	30	ADHD	ADHDRS-IV-P PSQ	12	Significant decrease in total ADHD score and subscore for inattention, hyperactivity and impulsivity	
Rousseau et al. (2009)	105	Immigrant and refugee preschoolers with traumatization	Strenght and Difficulties Questionnaire Teachers 'and Parents'	10	Significant reduction in SDQ total scores, emotional symptoms, relational subscale	.36 .43 .48
Han et al. (2017)	20	Externalizing behavioral problems	CBCL WISC AUQEI Cubes and Vocabulary Sub-tests	16(g)	SPT was effective in reducing agression and negative peer interactions	
Lee & Jang (2013)	35	Children with behavior problems from low income families	Peer Relationship Test for Teachers, SSRS	12(g)	Significant improvements in sociality and stability of peer relationships, in leadership competence and cooperativeness, of social skills	
Kim & Kim (2015)	32	Adolesents addicted to smartphone, focusing on peer attachment, impulsiveness, social anxiety	Ns	10(g)	Improving peer attachment, decreasing impulsivity and social anxiety	
Ramos & de Matta (2018)	60	Traumatized children in childcare facilities	CBCL WISC AUQEI	12(g)	Significant imrovements in internalizing, externalizing and total problems	
Shin & Jang (2017)	32	Adolecents addicted to smartphone	S-scale CES-D BAI	10(g)	Significant reduction in addiction, depression level, anxiety level	
Sim & Jang (2013)	18	Juvenile deliquents with agressions	BDHI	10	Significant reduction in aggression	
Zhang et al. (2009)	20	Children with anxiety disorders	SCARED EPQ	08	Improvements in anxiety and emotional stability	
Yoo (2015)	20	Children of alcoholic fathers from low income families	CAST-K	12	Significant reductions in anxiety and interpersonal stress, improvements in attachment relations	
Yang (2014)	30	Children in grandparents- grandchildren families in rural Korean areas	Teachers 'Report Form, Self-esteem Scale, Emotional Intelligence Scale	12(g)	Significant reduction in behavioral problems, improved self-esteem, emotional intelligence	

Notes.
ADHDRS-IV-P = ADHD-IV Rating Scale-Parent Version; PSQ = Parent Sympton Questionnaire; CBCL = Achenbach Child Behavior Checklist; WISC = Wechsler Intelligence Scale for Children; AUQEI = Autoquestionnaire Qualité de Vie Enfant Imagé; SSRS = Social Skill Rating System; S-scale = Youth Smartphone Addiction Self-report Scale; CES-D = Korean version of Center of Epidemiological Studies Depression Scale; BAI = Korean version of Beck Anxiety inventory; BDHI = Buss & Durkee Hostility Inventory; SCARED = Screen for Child Anxiety Related Emotional Disorders; EPQ = Eysenck Personality Questionnaire; CAST-K = Korean version of the Children of Alcoholics Test.

Table 2
Randomized Controlled Trials (Adult mental health problems).

Study	N	Diagnoses	Measures	Number of sessions (group/single)	Results	ES
Foo et al. (2017)	22	Generalized Anxiety Disorder		10	Significant reduction of anxiety	2.584
Wang and Zang (2014)	19	Students with high distress levels	Ego Psychological Resilience Scale	8(g)	Significant reduction of distress	
Kim (2014)	10	Depression of mothers with teenage children	BDI Differentiation of Self Scale, Mother-Child Relationship Index	10(g)	Significant decreases in depression, enhancement of self-differentiation of mothers and improvement in mother-child relationships	
Lee and Kowen (2016)	24	Mothers of children with different disabilities	Adult Self Report Achenbach, Korean Defense Style Questionnaire	12(g)	Significant decrease in anxiety and negative defense styles, increase in the use of adaptive defense styles	
Jang and Kim (2012)	*Ns*	Anxiety and loneliness in migrant women in Korea	Social Interaction Anxiety Scale, UCLA Loneliness Scale	10(g)	Significant decrease of anxiety in social interactions and loneliness, increase in 'positive self-expression 'and 'positive expressions about others'	

Notes.
BDI = Beck Depression Index.

contributed to the improvements.

Effectiveness studies

There are a number of empirical studies investigating the effects of SPT on different groups of clients, which either had no randomized distribution of participants to the treatment and control groups or no control group at all.

Child and adolescent mental health problems

Again, as in the RCTs, widely used standardized measures were applied to measure psychological problems and improvements over the course of therapy. A wide range of child and adolescent mental health problems were treated, including behavioral problems, low self-esteem, trauma, substance abuse and anxiety. All of the studies found significant improvements and, in those studies with control groups, these improvements were found only in the treatment condition versus no changes in the control group, apart from the Moon (2006) study, which found no difference between SPT and another psycho-educative group treatment (Table 3).

Some studies applied self-created measures. Liu (2008) in a pre-post-test one group design investigated orphans with psychological disabilities (n = 16) and found a significant reduction of indicators for disorders, that were assessed by a categorization system. Freedle, Altschul, & Freedle (2015) explored the effectiveness of the Bonding through Experiential Adventures in Recovery (BEAR) intensive outpatient program, of which SPT was an integrative part, in the treatment of adolescents and young adults (age 14–24) with co-occurring trauma and substance use disorders. A mixed methods quasi-experimental design was utilized to evaluate the program. Data was collected through questionnaires and focus groups. Results demonstrate that the youth who participated in BEAR significantly improved daily functioning at home, in school, and in their community, and reduced the severity of their substance use problem and symptoms of distress associated with trauma exposure. They found effect sizes for the decrease in symptoms d = .87 and in interpersonal distress d = 1.28. Sandplay therapy positively impacted engagement in treatment with youth endorsing sandplay as the most helpful part of the program.

Adult mental health problems

These effectiveness studies investigated partly unusual psychological problems in adults, e.g. social problems or problems connected with physical disabilities and the experience of natural disasters. For example, Hwang and Kim (2017) investigated the effectiveness of SPT provided for earthquake survivors in Nepal (n = 62). Group SPT was provided to parents to alleviate parents' psychological stress and their children's mental health problems. Parents who had children aged 6–13 residing in refugee camps joined 7 two hour sessions of group SPT. The study found significant improvements on all dimensions tested. The Zhang, Zhang, Haslam, & Jiang (2011) study explored the outcomes of Restricted Group Sandplay Therapy (RGST) on college students suffering from interpersonal problems, avoidance and self image issues (n = 9). Participants received eight sessions of RGST, a certain form of group SPT in which participation in the group sandtray picture is regulated by a set of rules. Participant outcomes were measured using the Social Avoidance and Distress Scale (SAD) at pretest and posttest; additionally participants' self image as reflected by their choice of sandtray miniatures to represent themselves was evaluated. The results found significant improvements in both participants' SAD scores and self-image representations. Social avoidance scores decreased by 62.8% and social distress scores by 55.1%. Zhang, Liu, & Zhang (2010) replicated these findings for university students. The Noh & Kim, 2013 study is a replication of the Lee & Jung (2012) study, which both found the same significant effect (Table 4).

Table 3
Effectiveness Studies (Child and adolescent mental health problems).

Study	Study design	N	Diagnoses	Measures	Number of sessions (group/single)	Results	ES
Flahive and Ray (2005)	Pre-post-test control group design, quasi-experimental	56	Children with behavioral problems	CBCL-TRF BASC-PRF BASC-SRP	10(g)	Improvements in overall behaviors, externalizing and internalizing behavior problems	.52-.63
Shen and Amstrong (2008)	Pre-post-test control group design, quasi-experimental	37	Girls with low self-esteem	Self-Perception Profile for Children	*Ns*	Large improvements on global self-esteem	.83
Moon (2006)	Pre-post-test control group design	*ns*	Children with social behavior problems and low self-esteem	Piers-Harris Childrens 'Self-Concept Scale, Devereux Behavior Raiting Scale	12(g)	Improvements for behavior problems and self-esteem, no difference between SPT and other psycho-educative group treatment	
Plotkin (2011)	Pre-post-test control group design, quasi-experimental	32	Children who experienced parental divorce	CBCL	12(g)	Improvements for internalizing and externalizing behaviors	
von Gontard et al. (2010)	Pre, post, follow-up, one group	56	Children with diverse ICD-10 diagnoses	CBCL	*Ns*	Improvements for all scales, stable over the follow-up	
Unnsteinsdóttir (2012)	Pre-post-test, one group	19	Elementary school children with cognitive disabilities, attention deficits, emotional problems	WISC, CBCL, ADHD Raiting Scale IV, BECKS 'Youth, Ouvinen and Sams 'scale	12(g)	Improvement in WISC and perception scales, facilitation in emotional and behavioral development	
Lui (2008)	Pre-post-test, one group	16	Orphans with psychological disabilities	Categorization system	Ns	Significant reduction of indicators for disorders	
Freedle, Altschul, and Freedle, (2015)	Pre- post test one group, Quasi-experimental design	22	Adolescents with co-occuring trauma and substance abuse	Y-OQ, Y-OQSR, OQ-45, and CAFAS Focus groups	*Ns*	Improved daily functioning at home, in school, in community, reduction in substance abuse and trauma related distress	.87-1.28
Chen et al. (2006)	*Ns*	18	Junior high school students with high scores in test anxiety	*Ns*	*Ns*	Improvement in test anxiety levels	

Notes.
CBCL-TRF = CBCL-Teacher Report Form; BASK-PRF = Behavior Asessment System for Children-Parent Report Form; BASK SRP = BASC-Self Report of Personality; CBCL = Achenbach Child Behavior Checklist; WISC = Wechsler Intelligence Scale for Children; BECKS' Youth = BECKS' Youth Inventories of Emotional and Social Impairment; Ouvienen and Sams' scale = Ouvienen and Sams' scale of self-image I Think I Am; Y-OC = Youth Outcome Questionnaire; YOQ-SR = Youth Outcome Questionnaire Self-Report; OQ-45 = Outcome Questionnaire; CAFAS = Child and Adolescent Functional Scale.

Table 4
Effectiveness Studies (Adult mental health problems).

Study	Study design	N	Diagnoses	Measures	Number of sessions (group/single)	Results	ES
Yang (2014)	Pre-post-test	11	College students with blindness	ASB, Self-esteem Scale, Sociality Scale, SCC	8	Significant decrease in anxiety, improved self-esteem and sociality	
Park and Lee (2013)	Pre-post-test	12	Visually disabled university students	ASB KDS-30 PWBS SCC	*Ns*	Decrease in anxiety, depression and negative thoughts about self	
Hwang and Kim (2017)	Pre-post-test	62	Earthquake survivors in Nepal	IES-R Parental Stress Scale, Psychological Well-Being-Post-Trauma Chances Questionnaire, PROPS CROPS	7(g)	Significant improvements on all dimensions tested	
Osumi et al. (2010)	Pre-post-test with follow-up	30	Major depression or dysthymia	GAF SDS	*Ns*	SPT being not a sufficient treatment method for reaching sustainable improvement	
Zhang et al. (2011)	Pre-post-test	9	College students with interpersonal problems, avoidance and self image issues	SAD	8(g)	Significant improvements in SAD and self image	
Zhang, liu et al. (2010)	Pre-post-test	9	University students with interpersonal difficulties	SAD	8(g)	Significant reduction in anxiety and phobia	
Jung, 2012	Pre-post-test	8	College students with ADHD tendencies	CAARS-K BDI STAI Saliva cortisol	10	Significant reduction in depression, state-trait anxiety and salivary cortisol levels	
Noh & Kim (2013)	Pre-post-test	8	College students with ADHD tendencies	CAARS-K BDI STAI Saliva cortisol	10	Significant reduction in anxiety, interpersonal stress and salivary cortisol levels	

Notes.
ASB = Anxiety Scale for the Blind; SCC = Sandplay Categorical Checklist; KDS-30 = Korean Depression Scale; PWBS = Psychological Well-being Scale; IES-R = Impact of Event Scale-Revised; PROPS = Parent Report of Post-traumatic Symptoms; CROPS = Child Report of Post-traumatic Symptoms; GAF = Global Assessment of Functioning Scale; SDS = Self-raiting Depression Scale; SAD = Social Avoidance and Distress Scale; CAARS-K = Conners 'Adult ADHD Raiting Scale-Korean Version; BDI = Beck Depression Index; STAI = State-Trait Anxiety Inventory.

Osumi et al. (2010) investigated the effect of SPT in combination with the Japanese method of Morita therapy in the treatment of 30 adult patients with major depression or dysthymia in an outpatient setting. Measures included the Global Assessment of Functioning scale (GAF) and Self-rating Depression Scale (SDS). Two groups were tested in a pre-post-test design, both groups received weekly sessions of SPT, in group 2 additionally Morita therapy was applied. A significant improvement was found in both groups at posttreatment, however improvements disappeared at four months follow-up in the SPT group, whereas it could be continued in the group with combined treatment. These results could be interpreted as SPT being not a sufficient treatment method for reaching sustainable improvement. This is the only such finding for SPT in all of the studies reported here.

Discussion

The aim of this study was to examine the evidence base for SPT in the application to child and adult mental health problems and disorders. In doing so, the aim is to be a practical guide for researchers to determine the need for further research, and for clinicians and practitioners to determine whether SPT in an individual or group setting may be a valuable option for the treatment of their clients.

State of evidence

There has been a sharp increase in the number of evaluations of SPT in the last 10 years, with a surprisingly large number of RCTs, given the fact that SPT is not very well known outside of specialist circles. Especially Chinese and Korean groups of researchers have contributed to this increase in research activities. There is a solid evidence base pointing to the capacity of SPT in presenting a valid picture of the inner world of the client as well as in identifying aspects of the psychopathology of the client. The empirical findings point to the fact that sandplay may be a valuable tool for assessment in clinical psychology. These findings can also serve as a support for the theoretical model of SPT, namely that the client's inner world, e.g. characteristics of his/her psychopathology, is projected into and manifested in the sandtray picture. There is also considerable evidence from process studies supporting the theoretical model of the process of change taking place in SPT. All the studies investigating the effects of SPT found significant improvements in the treatment groups, there was no study that reported acerbations in the treatment group. The effect sizes that were found range from moderate to large. Findings from a noteworthy 16 RCT's also point towards efficacy of SPT. SPT seems to be an effective treatment method on a wide range of psychological problems and disorders. SPT was found to have clinical utility with a range of clinical populations, including emotional and behavioral problems, ADHD, anxiety, depression, addictive behaviors and posttraumatic stress in children and adolescents, as well as anxiety, depression and posttraumatic stress in adults. On the other hand there are limitations to the studies reported above: in the majority of the studies there is only a small sample size; only a few studies report effect sizes; the studies focusing also on the process of SPT make use of very different measures for assessing process aspects, which makes them difficult to be compared.

Conclusions

One reason for the increased interest in SPT is the nonverbal aspect of its approach. There are many clients who still do not respond to treatment with current psychotherapies or have difficulties to receive treatment, namely young children, adolescents, and adults with posttraumatic problems or disabilities. SPT changes the focus of therapy away from solely verbal communication or cognitive insight. In many of the fields reported above, the great advantage of SPT and its applicability is based on its nonverbal approach, making use of play, creating a very low threshold for the initiation of psychotherapy. In some fields and for different groups of clients, namely young children, and individuals with disabilities, such as blindness, or comparable states, e.g. dementia or autism spectrum disorder, it seems to be one of the few or even the only option for a psychotherapeutic approach. For trauma victims it seems to offer the opportunity to address the psychological problems in a very indirect and nonconfrontational way, thus preventing the client from re-traumatization. Thus, SPT offers an innovative and transdiagnostic approach for reducing psychopathology and increasing well-being. In the studies which investigated the effects of SPT applied in a group setting, it has to be assumed that general factors of group therapy at least partially contributed to the effects; nevertheless it can be summarized that group SPT seems to be especially effective and applicable for clients with social anxiety and problems in interpersonal relationships.

It also has to be noted that in the majority of the studies, the treatment consisted of not more than 10–12 therapy sessions, which is a considerably small effort compared to other forms of psychotherapy, even more when SPT is applied in a group setting. On the other hand, SPT can only be applied when the necessary material is available, namely sandtray and play figures, which could be an obstacle for psychotherapists to make use of the method. Nevertheless it creates the possibility to offer psychotherapy to larger numbers of clients, e.g. with posttraumatic stress, where language problems may make conventional psychotherapy impossible. This may be especially useful for the treatment of traumatized refugees, which have recently come to some countries in large numbers (e.g. Germany), or victims of large-scale disasters. Here, SPT can offer viable and effective solutions.

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