

# Theory-Guided Virtual Reality Psychotherapies: Going beyond CBT-Based Approaches

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**Abstract.** Most VR applications in mental health care have focused on cognitive behavioral therapy. This paper is a call to expand research into other theory-guided psychotherapy practices. Evidence is presented that supports the so-called *dodo bird effect* that contends that all bona fide psychotherapies are equally effective. Two avenues for expanding research are suggested that focus on VR strengths: creating VR *playspaces* (virtual environments where therapist and client can engage playfully) and VR drama therapy.

**Keywords:** virtual reality, drama therapy, creative expression therapy, playspace, psychotherapy, dodo bird effect.

## 1 Introduction

VR as a tool for psychotherapy has come a long way since the first literature review of a few case studies in 1998 [1]. There is little doubt now that VR has made tremendous inroads into the treatment, and even prevention, of many psychological disorders. Much of this work has been based on best practices in cognitive behavioral therapy (CBT) transposed to VR. CBT describes a group of psychological treatments that are evidence based and that work on the premise that changes in thinking produce emotional and behavioral changes. CBT focuses on teaching clients specific skills to handle specific symptoms and are, as a result, usually short-term.

VR psychotherapy applications arose in the treatment of phobias and post-traumatic stress disorder (PTSD), showing great promise as a substitute for imaginative, as well as actual, exposure to fearful stimuli [2]. Psychosocial interventions, particularly exposure therapy (ET), are generally considered the empirically-supported treatments of choice [3]. Since VR uses multiple sensory modalities, providing “a perceptual illusion of non-mediation” [4] with fully adjustable parameters, VR implementations of ET were a logical first step, and VR exposure therapy (VRET) [5] has proven successful in treating a variety of phobias, acute stress disorder, and PTSD [6]. Using similar techniques, studies have shown the effectiveness of VR cue exposure therapy (VRCUE) in treating substance abuse [7]

and of VR food exposure therapy in treating eating disorders [8, 9]. In addition to exposing patients to stimuli, VR applications have also been developed that distract patients from unwanted stimuli, as in the case of pain management [10]. VR has also proven an effective tool for stress reduction and inoculation training [2]. For a comprehensive review of VR studies from a CBT perspective (VR-CBT), see [11]; they report over 140 articles on VR employments of CBT techniques. In general, the consensus is that VR-CBT provides effective tools for managing pain and for treating a variety of psychological disorders.

Given these successes it makes sense that VR research in psychotherapy has almost exclusively focused on CBT treatments and continues to do so [6, 11, 12]. Over the last 20 years, evidence-based practice (EBP), such as CBT, and empirically supported treatments (ESTs) have gained prominence in psychotherapy [13], adding yet more incentive to transpose ESTs to VR environments. It comes as no surprise then that little research has explored VR as a tool or practice modality for theory-guided and insight-based practices in psychotherapy, such as psychoanalysis, psychodynamic psychotherapy, analytical or depth (Jungian) psychotherapy, humanistic, existential, and relational psychotherapy, to name but a few. In fact, a recent search of the literature came up empty on VR studies involving the theory-guided psychotherapy practices listed above.

The intention of this paper is first to provide arguments justifying research into VR as a tool for theory-guided psychotherapies (VR-TGP). I do this in section 2 by reviewing some of the literature showing a preponderance of evidence that no therapeutic modality or bona fide psychotherapeutic treatment is better than any other. The second intention is to offer some ideas for expanding VR research in psychotherapy to include other orientations. In section 3 I briefly look at the possibility of creating VR playspaces and VR applications for drama therapy. I conclude in section 3 by calling for the development of VR systems that can be used by clinicians to develop new therapies that arise from the unique characteristics and strengths offered by VR.

## 2 Empirical Grounds for Exploring Theory-Guided Psychotherapies

Despite the recent emphasis on EBP, a number of meta-analyses comparing treatments for different psychological disorders show that no bona fide technique is more effective than another, thus confirming Rosenzweig's 1936 *dodo bird* conjecture [14]; empirically [15], to quote Dodo in *Alice and Wonderland*, "Everyone has won and all must have prizes." For example, both a meta-analysis of all studies published between 1980 and 2006 comparing treatments for children suffering from anxiety, depression, conduct disorder, and attention deficit hyperactivity disorder [16] and a meta-analysis focused on all studies published between 1989 and 2006 comparing treatments for PTSD [17] showed no differences in outcome between treatments. In the meta-analysis of PTSD studies [17], a broad range of treatments were represented: hypnotherapy, stress inoculation, exposure therapy, CBT, prolonged exposure,

imaginal exposure, and eye movement desensitization and reprocessing. As Elkins [18] notes, “after 40 years of specificity research and millions of research dollars, there is still no scientific basis for privileging one modality and set of techniques over other modalities and techniques. Instead, scientific findings confirm that all *bona fide* psychotherapies are robustly effective, and equally so” (p. 451).

Particularly noteworthy are the results of one of the best experimentally designed studies that focused on CBT for depression. When Jacobson et al. [19] systematically removed the critical cognitive components in treatment, they found no reduction in outcomes. A more recent CBT study for PTSD also showed no attenuation of outcome when critical cognitive components were removed [20].

What research does show unequivocally is that psychotherapy is effective,<sup>1</sup> but how and why it works are still unanswered questions. Many researchers, however, are suggesting that certain common factors are the primary determinants of effectiveness, with the personal and interpersonal, i.e., the characteristics of the client, therapist, their relationship and alliance, accounting for most outcome variance. Andrews [21] has argued that therapist qualities, such as warmth, empathy, and respect may account for as much as 80% of the variance (for a discussion of research findings, see [18, 22]).

Frank and Frank [23] were among the first researchers to identify common factors in psychotherapy and to offer a theoretical framework (that also accounts for the dodo bird effect) based on psychotherapy as a cultural practice. They identified the following four common factors in psychotherapy: 1) an emotionally charged and confiding relationship with a helping person; 2) a healing setting that engages the client’s expectations that the helper will be of assistance; 3) a rationale, conceptual scheme, or myth (it need not be true, but both client and healer must believe it) that explains the client’s problems and how the client can heal; and 4) a procedure or ritual that requires the active participation of both client and therapist and that follows the rationale underlying the therapy. More recently, Tracey [24], using multidimensional scaling and cluster analysis, conceptualized common factors into three clusters: bond, information, and role. As Wampold [25] has shown, these models, as well as other explanations of psychotherapy as a cultural healing practice are consistent with research both in psychology and in medicine.

Despite the evidence suggesting that specific theoretical orientations and techniques may have little to do with outcome variance, both are essential components in Frank and Frank’s model: theories provide #3, the rationale behind the therapy, and techniques are included in #4, the ritual needed for healing. According to Wampold [26], theory plays a critical, guiding role in psychotherapy. He writes, “These components are vacuous without theory—simply, there is no therapy without theory. Every client wants an explanation for what ails him or her and a set of therapeutic actions that the client believes will improve his or her condition. The last two components—the rationale and the treatment—emanate necessarily from theory” (p. 43).

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<sup>1</sup> Wampold states that psychotherapy has an NNT (number needed to treat) of 3. The ideal NNT is 1, where everyone improves with treatment and no one improves in the control group. As a comparison, aspirin as a prophylaxis for heart attacks has an NNT of 129.

There are, of course, well-conducted trials that cast doubts on the dodo bird effect. Dimidjian et al. [27], for example, found that behavioral activation (BA) was superior to CBT for severely depressed patients. However, a later study, performed by the same group, that explored the enduring effects of CBT, BA, and antidepressant medication found no statistically significant differences between exposure to CBT and BA in a second year follow-up [28].

What are some of the implications of this research to VR research in psychotherapy? First, we should not be surprised to find that VR mental health applications fare no better than traditional therapies (for a survey of results, see, for instance, [29]). Second, there are no empirically valid grounds to restrict research in VR mental health care to CBT. The scientific evidence in support of the dodo bird effect justifies opening the door of VR research in mental health care to other established theory-guided practices. Third, even if the dodo bird conjecture continues to prove true, this does not obviate the need to focus much VR research in mental health care on EBP. Empirical studies supporting the efficacy of many established theory-guided practices have been published and should be utilized to establish which practices and techniques are indeed bona fide and worthy of exploration and which are not. But a word of caution here: some well-established practices, as noted in the next section, are based on the expressive arts (play therapy, drama therapy, creative arts therapy, etc.), and there is an ongoing debate about what constitutes appropriate evidence in creative arts therapy. Be that as it may, there is, nonetheless, a growing body of evidence supporting the effectiveness of creative arts therapy (see [30]).

### 3 VR-TGP (Playing with Possibilities)

Creative arts expression and play therapy have long been established practices in the offices of clinicians working from many orientations. Almost every major theorist has privileged creativity, the imagination, and play and has advocated methods for fostering these qualities. Freud [31] described play as the child's mechanism for working out trauma, and Jung asserted that "Not the artist alone, but every creative individual whatsoever owes all that is greatest in his life to fantasy" [32, p. 93]. Jung developed a therapeutic method that actively engages fantasy called *active imagination*, which leads people to a deeper understanding of themselves and furthers the process of individuation. Winnicott, a leading object relations theorist, has written "that it is in playing and only in playing that the individual child or adult is able to be creative and to use the whole personality, and it is only in being creative that the individual discovers the self" [33, p. 54].

That people are using computer games and VR worlds today to satisfy their needs to play and to be creative has been provocatively argued by McGonigal [34]. Therapists are taking note of this trend and are increasingly adding computer games and the Internet in their work with clients [35], especially with children and adolescents. In this section I suggest two areas where play and creative expression can

be enhanced by VR for therapeutic purposes: VR healing environments, or *playspaces* [36], and VR drama therapy.

### 3.1 VR Playspaces

The idea of a therapeutic playspace comes from drama therapy and is defined by Johnson as “a state of playfulness that exists between the client and therapist” [37, p. 170]. Future research could explore creating virtual environments that foster play between client and therapist (thereby possibly strengthening the alliance) by providing virtual creative studios, with a host of expressive tools, and a virtual museum space to collect creative expressions (paintings, songs, poems) and important relics (photographs and videos) of the client for review and sharing with the therapist. All objects in the virtual environment could be used as containers to hold difficult emotions and traumatic memories, as well as creative expressions and emotion word clouds. Virtual spaces could thus facilitate in new ways such games for adolescents and children as “Feelings Hide-and-Seek” [38], a therapeutic version of the childhood game hide-and-seek, where feelings, written on cards, are hidden and then through the process of seeking out are retrieved and discussed.

Another possibility for play activity in a VR playspace would be applications inspired by one of the first and most widely used play therapy techniques, sandplay. As it is known today, sandplay was developed by Kalfff [39] out of Lowenfeld’s “World Technique” [40]<sup>2</sup>, Eastern ideas, Neumann’s stage theory of ego development [41], and Jung’s concept of individualization [42]. Kalfff’s method of sandplay therapy is divided into two stages. In the first stage, the client makes a picture in a sandtray by grouping objects and sculpturing the sand. Clients are typically instructed to look at the available materials and pick out objects that speak to them or to close their eyes and visualize a world, which they are then asked to recreate in the sand. In the second stage the client tells a story about the picture. For Kalfff, a Jungian analyst, sandplay encourages communication and collaboration between conscious awareness and unconscious fantasies and images, and “serves as a bridge between inner and outer worlds” [43, p. 304].

Although I am unaware of any attempt to make a computer version of sandplay, at least one counselor, Skigen, has exploited the popular computer game Sims in a way she claims resembles sandplay therapy [44]. In her practice with children, “Simsplay,” like sandplay, takes place in her office in a protected and tolerant setting and provides an imaginative activity that is a “mirror for the individuation process” [45, p. 17]. Following Skigen’s lead, perhaps other games could be developed with therapists for VR extensions and modifications of sandplay.

Some advantages of VR sandplay would address concerns discussed by Dale and Lyddon [46], who apply a constructivist approach to sandplay. They stress the importance of the therapist’s role in recording and dismantling the sandworld. Most therapists photograph or sketch the sandworld and then videotape or audio record the stage two discussions. One advantage of sandplay games in virtual environments

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<sup>2</sup> The first sandplay therapy technique, developed in 1929.

would be the fact that sandplay sessions could ordinarily and unobtrusively be recorded and played back when needed. Dale and Lyddon also note how taking the sandworld apart before the client leaves the office is known to be difficult for some clients. They spend some time discussing various ways of overcoming this problem. Unlike the therapists' offices of today, where the creative expressions of clients often have to be put away after each session, VR playspaces could be customized for each client and resumed for each session.

### 3.2 VR Drama Therapy

There are many definitions of drama therapy. Most definitions mention role-playing, dramatization, verbal and nonverbal communication, and reflection taking place within a dyad or group setting and employed for the purpose of psychological healing [37]. Although mostly originating in the ideas of Moreno, considered the father of Drama therapy, many important theorists have had a hand in the development of drama therapy, most notably, Jung, Murray, Perls, Kelly, Wolpe, Lazarus, and Winnicott (for an historical overview see [37]). Perhaps one of the most famous and commonly practiced drama therapy techniques is the empty chair dialogue intervention, where the client is asked to engage in dialogue with an imaginary person of significance sitting in a nearby empty chair [47].

It is very possible that drama therapy would work well in VR worlds. Incorporating drama and role-playing into VR games and simulations has been the focus of recent research (see [48] for a survey). The close relationship between VR and improvisational theater has been pointed out by many and explicated in terms of narrative by Aylett and Louchart [49]. They find that an important characteristic of VR is that the user "to whom a narrative is communicated is 'active' in the unfolding of the narrative as opposed to its 'passive' role in most other classical narrative media (i.e., spectator)" (p. 3). The authors also discuss the role of the "drama manager" and "game master" in ways that resonate with drama therapy and the notion of the therapist as guide, "a figure that . . . both witnesses and leads the client on the therapeutic journey" [37, p. 240].

Despite recent successes using dramatization and role-playing in games and simulation, few researchers have explored them in VR mental health applications. A notable exception is the work of Park and Ku [50], who used virtual role-playing for social skills training (SST) for patients with schizophrenia. They found that the SST-VR group showed increased communications skills compared to those using traditional SST (SST-TR). However, those using SST-VR showed less improvement in nonverbal skills compared to those using SST-TR. This latter outcome could be explained by the fact that the study used a virtual human in the role-playing sessions. As noted in section 2, considerable evidence suggests that interpersonal factors (items 1 and 2 in Frank and Frank's model) are important in therapeutic outcomes. New VR applications in mental health care that make use of role-playing might explore the benefits of bringing remotely located therapists into VR environments and work on representing as realistically as possible the nonverbal behaviors generated by the therapist in his or her conversational interactions with the patients.

Drama therapy offers a rich storehouse of ideas for new VR applications in mental health care: role rehearsal, role expansion, role reversal, narradrama, fixed-role therapy, the empty chair dialogue intervention, and playback theatre [37], to name a few. Take as one avenue of exploration, Kelly's fixed-role therapy [51], where the client is asked to take on a fictional role to play throughout the week. In follow-up sessions the client and therapist discuss the effectiveness of the new role. Fixed role therapy gives a clinician the means of understanding the client's unique frame of reference and patterns of meaning making, as well as a method for suggesting alternative patterns. VR renditions of fixed role therapy could take several forms. For example, clients could practice playing new roles with a therapist and group of virtual or real actors in a VE before moving the role out into the everyday world. Clients could also dramatically recreate significant moments they experienced the previous week as part of the discussion and working-through process.

Playback theatre (PT) is another interesting possibility for VR drama therapy. PT is a form of improvisational theatre where members of an audience tell their stories, one at a time, to a troupe of actors who then go about dramatizing the story [37]. A special member of the troupe, called "the conductor," interviews a selected member of the audience, called "the teller." Once the interview is finished, the conductor asks the teller to pick out actors to represent the characters in his or her story. The actors, along with a group of musicians, then improvise the story, with the conductor checking in with the teller to make sure that the actors have depicted the story accurately. If not, the actors are asked to replay these scenes. VR PT could unite disparate groups of actors in remote locations for the purpose of performing PT in a variety of virtual therapeutic settings.

## 4 Conclusion

Most VR applications in mental health care have focused on best practices in CBT. In this paper, I reviewed evidence in support of the dodo bird effect that contends that all bona fide psychotherapies are equally effective. Several implications for VR research in mental health care were drawn. In particular, it was noted that there are no empirically valid grounds to restrict research in VR mental health care to CBT. The scientific evidence in support of the dodo bird effect justifies opening the door of VR research to other established theory-guided practices.

Given the importance of common factors in psychotherapy effectiveness, another implication is that VR research may need to shift so that it focuses more on what does matter. Frank and Frank's common factor model [23] was presented as a way of understanding psychotherapy as a cultural practice. Frank and Frank identified the following four common factors in psychotherapy: 1) an emotionally charged and confiding relationship with a helping person; 2) a healing setting that engages the client's expectations that the helper will be of assistance; 3) a rationale, conceptual scheme, or myth that explains the client's problems and how the client can heal; and 4) a procedure or ritual that requires the active participation of both client and therapist.

I believe that all four factors in Frank and Frank's model can be augmented by VR. Two avenues for expanding research were suggested that focus on VR strengths: creating VR playspaces, i.e., virtual environments where therapist and client could engage playfully, and VR drama therapy, where roles could be tried out and discussed and personal stories could be dramatized. My focus in this discussion was on including real therapists and, in general, real actors (rather than virtual characters) (#1) in virtual healing settings (#2) that allowed for the virtual enactment of rituals (#4) based on established psychotherapy theories (#3). Although some of these ideas transposed current practices into VR worlds, ideally VR systems in the future, such as VR playspaces, will be developed that could be used creatively by clinicians to develop new therapies that arise from the unique characteristics offered by VR.

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