CASE REPORT

WILEY

Long-term psychodynamic psychotherapy in a face-to-face versus videoconferencing setting: A single case study

Sylke Andreas[1] | Thorsten-Christian Gablonski[1] |
Wolfgang Tschacher[2] | Albrecht Gebhardt[1] | Sven Rabung[1] |
Holger Schulz[3] | Jennifer Kadur[1]

[1]Department of Clinical Psychology, Psychotherapy and Psychoanalysis, Institute of Psychology, University of Klagenfurt, Klagenfurt am Wörthersee, Austria

[2]University Hospital of Psychiatry and Psychotherapy, Experimental Psychology Division, University of Bern, Bern, Switzerland

[3]Department of Medical Psychology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

Correspondence
Sylke Andreas, Department of Clinical Psychology, Psychotherapy and Psychoanalysis, Institute for Psychology, Alpen-Adria-Universität Klagenfurt, Universitätsstr. 65-67, A-9020 Klagenfurt am Wörthersee, Austria.
Email: sylke.andreas@aau.at

Abstract

Objective: Due to the coronavirus pandemic and crisis, psychotherapists around the world were forced to switch to video- or tele-based treatments overnight. To date, only a few studies on the effectiveness of video-based psychodynamic psychotherapy via the Internet exist. Therefore, the goal of the present study was to examine symptom improvement, therapeutic relationship, nonverbal synchrony processes, and intersession processes within a systematic single case design and compare face-to-face to video-based approaches in long-term psychodynamic-oriented psychotherapy.

Methods: We examined 85 sessions of a client with major depression whose psychodynamic psychotherapy changed from a face-to-face setting to a video-based setting. Video recordings were analyzed using motion energy analysis, and nonverbal synchrony was computed using a surrogate synchrony approach. Time series analyses were performed to analyze changes in symptom severity, therapeutic relationship, and intersession processes.

Results: The results showed that symptom severity improved descriptively, but not significantly, across the

entire course of psychotherapy. There were significant differences, however, in the therapeutic relationship, intersession experiences, and synchronous behavior between the face-to-face and video-based settings.

Conclusion: The results indicate that the presented methodology is well situated to investigate the question whether psychodynamic psychotherapy in video-based setting works in the sameway as in a face-to-face setting.

1 | INTRODUCTION

Depression is one of the leading causes of disability in the world (Wittchen & Jacobi, 2005), with at least 350 million people being affected worldwide (Beck, 1967). Efficacious evidence-based treatments are available, such as cognitive-behavioral or psychodynamic treatments (Barth et al., 2013; Chen et al., 2020; Driessen et al., 2010; Fonagy et al., 2020). However, even in Europe, only 31% of people in need of treatment for depression take advantage of specialized mental health-care services (Alonso et al., 2004), and the percentage is probably far lower in less developed parts of the world.

Due to the coronavirus pandemic and crisis, psychotherapists around the world were forced to switch to video- or tele-based treatments overnight (Wind et al., 2020). Different forms of tele-psychotherapy have been established in the last decades: there are, for example, guided self-help programs, where patients get text-based materials and a therapist is guiding them via phone or e-mail; there is computerized psychotherapy with or without support of a real therapists and there are offers providing psychotherapy via video conferencing (Andersson & Cuijpers, 2009). Thus, services vary in the extent to which patients have contact with psychotherapists, how much online activity is required, and how much feedback patients receive (Andersson & Cuijpers, 2009).

The internet offers a highly promising opportunity to cross barriers to deliver psychotherapy (e.g., stigmatization, lack of mental health-care specialists in rural areas, physical disability, constraints of time and money, or a pandemic situation; Scharff, 2012). On the other hand, internet-delivered psychotherapy also requires certain preconditions, such as the availability of internet access with high-quality broadband service and a private place for both the therapist and the patient (Juhos & Meszaros, 2019). Furthermore, communications via the internet must be secure (Scharff, 2012). Challenges when communicating via the internet include sudden drops in connections, which can be frustrating and confusing (Scharff, 2012).

With regard to the role of support, internet treatment programs vary in the intensity of contact between the therapist and patient (Andersson & Cuijpers, 2009). Specializing in patients with affective disorder, Andersson and Cuijpers (2009) conducted a meta-analysis on the outcome of internet-based and other computerized psychological treatments. Across 15 comparisons between internet-based and computerized psychological treatment and a control group, the authors found an approximate medium mean effect size of $d = 0.41$ (Cohen, 1988). They then investigated whether contact with therapists had a moderator effect and indeed found differences here between therapist-guided treatment ($d = 0.61$) and unguided treatments, that is, treatments without contact to therapists ($d = 0.25$). In a meta-analysis of computerized therapy for depression and anxiety disorder, Andrews et al. (2010) found an almost large overall effect size (Hedges's g where $g = 0.78$; Hedges & Olkin, 1985). Johansson and

Andersson (2012) concluded that guided ICBT (internet cognitive behavioral therapy) for depression is equally effective as face-to-face treatment. In an updated version of the meta-analysis (Andersson & Cuijpers, 2009), Johansson and Andersson (2012) examined the efficacy of ICBT in 25 RCTs, in which patients were randomized to guided self-help or face-to-face treatment. In this review, the authors identified a strong positive relationship between support of the therapist and patient outcome (Spearman correlation of $p = 0.64$, $p < 0.01$). This result was consistent with Titov (2011), who found that internet-delivered psychotherapy guided with higher intensity translated to increased levels of therapist involvement, which correlated with larger effect sizes. A more recently conducted systematic review by Berryhill et al. (2019) reported a significant reduction of depressive symptoms for videoconferencing psychotherapy in 22 of 33 studies where cognitive-behavioral and behavioral activation were the interventions most often evaluated.

There is a lively discussion, especially in the psychodynamic–psychoanalytic community, on whether tele-based treatments are suitable to deliver this kind of psychotherapy (Juhos & Meszaros, 2019; Merchant, 2016). The discussion focuses mainly on the differences between personal and video/computer-based contact. A study by Probst et al. (2020) conducted during the coronavirus crisis in Austria showed that there was no significant difference in the use of video-based psychotherapy compared to face-to-face psychotherapy in four major psychotherapy disciplines (psychoanalytic, humanistic, systemic, and cognitive-behavioral).

Although empirical studies, especially of cognitive–behavioral psychotherapy via the internet, showed that equivalent results can be achieved in the therapeutic relationship and symptom improvement (Backhaus et al., 2012; Bashshur et al., 2016; Jenkins-Guarnieri et al., 2015; Lopez et al., 2019), the psychoanalytic community critically discusses whether video-based treatment is truly comparable to face-to-face treatment (Merchant, 2016). Critics argue that the computer may serve as a third object, internet-based treatment as violating neutrality and abstinence, the therapist as forced to be more active, and unconscious communication as inhibited (Merchant, 2016). However, these points are rather theory-driven arguments still lacking empirical data.

To date, only a few studies on psychodynamic psychotherapy via the internet exist (Johansson et al., 2012). Most of the recent studies are case reports (Ehrlich, 2019; Gutiérrez, 2017; Juhos & Meszaros, 2019) or evaluations of short-term psychodynamic treatments of patients with depression and medically unexplained pain, respectively (Chavooshi et al., 2016; Lemma & Fonagy, 2013). Chavooshi et al. (2016) indicated that intensive short-term dynamic psychotherapy delivered by video conferencing was more effective for medically unexplained pain patients than treatment-as-usual. However, the study did not directly compare the differences between video-based and face-to-face treatment. Lemma & Fonagy, (2013) also examined the practicability and feasibility of a web-based self-help guided offer of dynamic interpersonal therapy (DIT). Owing to the small sample size, only a trend in favor of the group with self-help materials and a therapeutic moderator was found; higher rates of reduction were observed in patients with mild depressive and anxiety symptoms. In the group with no therapist available and where participants had access to self-help materials, participation rates were lowest but still higher than in the group without materials or a moderator (Lemma & Fonagy, 2013). There is another study on the efficacy of psychodynamic self-help materials delivered via the internet. Johansson et al. (2012) randomized 92 participants with depression to psychodynamic self-help treatment or to an active control condition, that is, structured support treatment. The self-help treatment comprised nine modules provided weekly over a ten-week period, and modules were delivered as guided self-help with minimal text-based guidance. The content of the psychodynamic treatment included (a) seeing/recognizing unconscious patterns that contribute to emotional difficulties, (b) understanding these patterns, (c) breaking such unhelpful patterns, and (d) guarding against these patterns and/or relapses (Johansson & Andersson, 2012). The effect size of the primary outcome depression score (BDI-II) was large, with Cohen's $d = 1.11$ posttreatment, and remained high at the 10-month follow-up (Johansson & Andersson, 2012). The large effects may be due to the program focusing on identifying affective, cognitive, and interpersonal patterns (Johansson & Andersson, 2012). One limitation of this study was the high proportion of well-educated patients, a factor that may explain the large effect size of this trial.

Another important, but so far little investigated area in psychotherapeutic treatments is so-called intersession processes or experiences. This concept goes back to Orlinsky and Geller (1993) and refers to all conscious and spontaneous thoughts, feelings, fantasies, and memories of the therapy or the therapist between therapy sessions. According to the authors, these internalized representations can have a great influence on treatment progress and outcome (Orlinsky & Geller, 1993). The few studies on this topic to date have been able to show that most patients think about the therapist or therapy between their sessions and there was a relationship between these intersession experiences and treatment outcome (Andreas et al., 2016; Geller & Farber, 1993; Geller et al., 1981; Hartmann et al., 2010; Zeeck & Hartmann, 2005). Such correlations have also been found for the therapeutic alliance (Andreas et al., 2016; Hartmann et al., 2011; Knox et al., 1999; Owen et al., 2012).

Furthermore, studies have shown that in psychotherapy, not only is the verbal exchange between patient and therapist effective but also their bodily behavior and its synchronization, that is, the temporal matching of the activity of therapist and patient (Koole & Tschacher, 2016). In psychotherapy, synchrony was found in hand movements (Ramseyer & Tschacher, 2016), body posture (Sharpley et al., 2001; Trout & Rosenfeld, 1980), some physiological parameters (Tschacher & Meier, 2020), vocal pitch (Imel et al., 2014), and the overall physical movement of therapist and patient (Ramseyer & Tschacher, 2011; Ramseyer et al., 2014). Different studies have shown correlations between such nonverbal synchrony and self-reported therapeutic alliances (Tschacher & Meier, 2020; Yokotani et al., 2020), correlations between movement synchrony and outcomes in different therapeutic approaches (Altmann et al., 2020) and different manifestations in depression and anxiety disorders (Paulick et al., 2018). These nonverbal processes are therefore of particular interest in technology-based psychotherapy, where patients and therapists are physically remote from each other.

The findings of Johansson et al. (2012), Lemma & Fonagy, (2013), and Chavooshi et al. (2016) are promising for treating depressed patients via the internet. To date, however, there are no reports of direct comparisons between face-to-face and video-based treatment concerning symptom improvement, therapeutic relationship, nonverbal communication, and intersession processes. Some individual case studies critically reviewed internet use in psychoanalysis (Ehrlich, 2019; Gutiérrez, 2017; Juhos & Meszaros, 2019). However, investigations of individual cases with statistically systematic designs are lacking. Therefore, the goal of the present study was to examine symptom improvement, therapeutic relationship, nonverbal synchrony processes, and intersession processes within a systematic single case design and thereby compare face-to-face to video-based approaches in long-term psychodynamic-oriented psychotherapy. Our hypotheses are that there will be no significant differences or prolonged deterioration in symptom burden, therapeutic alliance, and intersession processes by switching to video-based treatment and that nonverbal synchrony between therapist and patient is similar during face-to-face and video-based sessions.

2 | MATERIALS & METHODS

2.1 | Client

The client in this single case study was a 32-year-old married woman. She lived with her husband and had no children. She grew up as a youngest daughter and described her childhood as basically happy, although her parents' marriage was marked by conflicts and they divorced several years ago. Since that time, the patient reported increasing depressive-anxious symptoms. At intake, the client fulfilled the diagnoses of recurrent moderate major depressive disorder (296.32), social phobia (300.23), and eating disorder not otherwise (307.50) specified according to the Diagnostic and Statistical Manual of Mental Disorders—IV (American Psychiatric Association, 2009). Topics and goals of treatment were the client's unfulfilled desire for children, strengthening of self-confidence, and the need for separation.

The client received a detailed battery of questionnaires at intake and a shorter battery after each therapy session, which addressed, in particular, the therapeutic alliance, intersession experiences, and symptom burden. At intake, the client's GSI (Global Severity Index) score from the Symptom-Checklist (Klaghofer & Brähler, 2001) was 2.56, representing a high symptom load. The patient signed informed consent regarding the collection and publication of her data and was treated in adherence to APA ethical standards.

2.2 | Therapist and therapy

The therapist was a licensed psychodynamically oriented psychotherapist with 20 years of therapeutic experience who conducted psychodynamic therapy with mentalization-based interventions in her outpatient practice. The mentalization-based interventions were under supervision by a member of the MBT network in the Netherlands, which is certified by the Anna Freud Centre located in London. The therapy comprised 85 sessions over 3 years. The first 28 sessions took place in a face-to-face setting, and afterwards, due to the therapist's change of residence, therapy was continued in a video-based setting via Skype (Kazdin, 2011; Onghena, 2005). This change in setting was experienced as very coherent by both the therapist and the patient. The patient reported that it worked better than expected and that she could continue therapy with the therapist she knew. All sessions, both face-to-face and video-based, were recorded with the consent of the client and therapist.

At the beginning of therapy, the sessions were characterized by the relationship with the mother, which the client experienced as restrictive. She suffered most from the fact that the mother "used" her as a mediator in the relationship with her sister. This triggered feelings of despair and helplessness in the client. In the early stage of therapy, she felt at the mercy of this behavior of the mother. Throughout therapy, however, the client increasingly succeeded in distancing herself from her mother's needs and expectations, which also led to her being able to tell the mother that she no longer wanted to be involved in the relationship between the mother and sister. However, this initially led to increased feelings of guilt.

In the further course of therapy, the desire to distance herself from her mother faded into the background, and the client was very occupied with her desire to have a child. Since the beginning of therapy, she had desperately tried to become pregnant by means of artificial fertility treatment. However, all attempts had failed, despite great effort. Although the client increasingly succeeded in expressing anger and resentment during therapy, this desire for a child remained largely unfulfilled and the client strongly rejected this desire. In this phase, the setting change from face-to-face to video-based treatment occurred.

Despite her state of exhaustion, the client undertook another artificial insemination attempt. After several years and unsuccessful attempts, fertility treatment was finally successful, and the client became pregnant. In addition to feelings of complete happiness, the first weeks of pregnancy were characterized by constant insecurity and fear of not being able to be a "good mother" and of losing the child again through miscarriage. It was possible to work on the regulation of her emotions in the therapeutic work so that she could increasingly distance herself from her fears.

In the time that followed, the client managed to progressively become independent of her mother's needs and to increasingly allow negative feelings such as anger and resentment. With the growing acceptance of negative feelings in previously idealized relationships (such as with her husband or mother), a significant change occurred. During this therapeutic work regarding rejected wishes of demarcation and assertion, she became a mother of a son and was now confronted with childlike needs, where at first no demarcation seemed possible. Her insecurity in dealing with the baby and the great fear that she might lose the baby also shaped the course of therapy in the end.

During the therapy, the client's overall depressive symptoms improved. The phases of sadness, depression, or panic situations became increasingly rare. However, depressive phases with sadness, self-doubt, fear of abandonment and, during infertility treatment, great despair over childlessness nevertheless broke out repeatedly. The central interpersonal defense—the lack of need and façade—was ready to change. In the end, the main focus

was on the feeling of insecurity of not being adequate and not doing it right, thus losing the love of the longed-for object again.

2.3 | Measures

Working Alliance Inventory—Short Revised (WAI-SR; Hatcher & Gillaspy, 2006; Wilmers et al., 2008). The WAI-SR is a short form of the Working Alliance Inventory (Horvath & Greenberg, 1989). This questionnaire assesses the therapeutic alliance between the patient and therapist. It contains three subscales according to the conceptualization of Bordin (1979): agreement on tasks, agreement on goals, and development of bonds, each with four items rated on 5-point Likert-type scales (1 = "rarely" to 5 = "always"). Higher scores indicate a stronger therapeutic alliance. In the present study, the patient version was used, in which the patient assesses the quality of the therapeutic working relationship. The WAI-SR shows good validity and reliability (Elvins & Green, 2008; Hatcher & Gillaspy, 2006; Wilmers et al., 2008).

Intersession Experiences Questionnaire (IEQ; Hartmann et al., 2003; Orlinsky & Tarragona, 1986). The IEQ is a self-report questionnaire with 52 items that records relevant processes between therapy sessions, so-called intersession experiences. These cover the following aspects: (A) intensity of intersession experiences; (B) context of intersession experiences with subcategories (B1) emotive problem-solving context and (B2) dreaming-drowsy context; (C) content of intersession experiences with subcategories (C1) recreating therapeutic dialog, (C2) applying therapy and (C3) relationship fantasies; (D) emotional quality of intersession experiences with subcategories (D1) positive emotions and (D2) negative emotions; and (E) significant others, sharing intersession experiences. Patients are asked to complete this questionnaire before a therapy session, and questions refer to the time between the previous therapy session and the current time. The items are answered on a five-point rating scale from 0 = "not at all" to 4 = "very often".

The questionnaire was translated from English into German by Hartmann (1997) and validated by means of factor analysis. A pilot study with 249 therapy episodes of 227 patients from outpatient (*N* = 82), day hospital (*N* = 105), and inpatient therapies (*N* = 62) was conducted. The internal consistencies (Cronbach's *α*) of the individual scales are sufficient, with 0.77 ("Intensity of the intersessional experience") and 0.72 ("Contexts of the intersessional experience"). Hartmann et al. (2003) reanalyzed the factorization of the questionnaire and showed that the structure of the intersession processes appeared stable.

Symptom Checklist SCL-K-9 (Klaghofer & Brähler, 2001). The SCL-K-9 is the German short version of the Symptom Checklist SCL-90-R (Derogatis, 1994), a self-assessment questionnaire for recording psychological symptom burden with nine items that cover the following scales: aggressiveness/hostility, compulsiveness, depression, insecurity in social contact, paranoid ideation, anxiety, somatization, phobic anxiety, and psychoticism. Responses are provided on 5-point Likert scales (0 = "not at all" to 4 = "very strong"). The severity of symptoms is represented by a total value, the Global Severity Index (GSI). A higher score indicates a higher symptom burden. The SCL-K-9 presented good psychometric properties (Klaghofer & Brähler, 2001; Prinz et al., 2008).

The client completed the IEQ before and the WAI-SR and SCL-K-9 after each therapy session.

2.4 | Nonverbal synchrony

All sessions were video recorded, documenting all body movements of both the therapist and patient. We aimed to compute the within-session degree of coordination ("synchrony") of both participants' movement dynamics. To prepare this computation, we first obtained the time series of movement using motion energy analysis (MEA; Ramseyer & Tschacher, 2011) and then computed the synchrony of all sessions using the surrogate synchrony

approach (Tschacher & Haken, 2019; Tschacher & Meier, 2020). Altmann et al. (2020) found good reliabilities for MEA; regarding convergent validity, Schoenherr et al. (2019) still report inconsistent results.

MEA is based on a frame-differencing algorithm, which quantifies the number of pixel changes from one movie frame to the next. Frame-by-frame changes operationalize body movement in predefined regions of interest of the video (we defined one region for the therapist's body and one for the patient's), provided that the camera position is fixed, and background and lighting conditions are constant. The resulting two time series per session have the same sampling rate as the video recordings (here, 20 observations per second in the face-to-face sessions and 6 observations per second in the online sessions due to two different camcorders in the two conditions).

The time series were analyzed using SUSY to detect the overall movement synchrony between the therapist and patient in each session. SUSY is based on cross-correlations of the time series of each session within a window of 10 s, that is, with time-lags of ±5 s. These correlations thus capture simultaneous (lag = 0) as well as moderately time-lagged synchronization of body movements. Thus, the amount of synchrony of both simultaneous movement and movement with response delays of up to 5 s is contained in the aggregated cross-correlations between therapist and client in the 10-s window. To arrive at a control condition, a surrogate test is implemented in SUSY; the time series of sessions are segmented into 30-s intervals, and cross-correlations are aggregated in each segment and then averaged over all segments of the whole session. In the surrogate tests, this same procedure is repeated with randomly shuffled segment sequences so that time-series data for the therapist and patient are correlated that did not actually take place at the same time, providing a value of "pseudosynchrony." Shuffling is repeated many times, which creates a distribution of pseudosynchronies against which the real synchrony of a session can be contrasted. This contrast is expressed in an effect size measure of synchrony for each session. Following the literature, we computed effect sizes "ESabs" and "ESnoabs." ESabs is provided when all cross-correlations are taken as absolute values, that is, the minus sign of negative cross-correlations is removed. ESnoabs uses no absolute values and allows for so-called antiphase synchrony, where more movement in one person is systematically responded to by less movement in the other.

As the sampling rates of face-to-face and online sessions were different, we downsampled all time series to two observations per second. The online data were additionally smoothed using a moving average filter with a width of five observations. Such preprocessing before applying SUSY was deemed necessary to reduce the impact of artifacts that occur due to the codes used by video cameras, so-called codecs, and especially by the codecs integrated into online video tools such as Skype or Zoom.

2.5 | Statistical analysis

The present data consist of several variables from questionnaires completed by the patient over roughly 3 years. From the 28 face-to-face sessions at the beginning of therapy, 26 questionnaires were available; the remaining 52 questionnaires referred to video-based sessions via Skype. Due to missing data, however, only 45 video-based measurement points could be included in the statistical analysis. There were some weeks without sessions, but most of the data were acquired at weekly intervals. For simplicity, we treated the data as equally spaced time series.

Measurements were provided on discrete scales ranging mostly between 0 and 6, and some variables were restricted to smaller scales (1–4) as described above. The original data were grouped into several variables (see Table 1), and group means were used for further analysis. For all variables except *Negative emotions* of the IEQ (Hartmann et al., 2003) and *GSI* of the SCL-K-9 (Klaghofer & Brähler, 2001), higher values indicate a better condition of the patient.

After exploratory analysis, Shapiro Wilk normality tests were applied to check the normality of the distribution of the assessed variables. For normally distributed variables, one-sided Welsh tests comparing the group means were used to check whether decreases were induced by switching to video-based treatment for those variables.

TABLE 1 Descriptives and correlations of face-to-face and video-based setting

	Face-to-face n = 26		Video-based n = 45		p^a	p^b
	M	SD	M	SD		
SCL	1.92	0.93	1.88	0.56	0.42	0.58
Intersession Experiences						
A. Intensity of intersession experience	2.45	0.47	1.89	0.42	0.00*	0.99
B1. Emotive problem-solving context	2.01	0.53	2.57	0.56	0.99	0.00*
B2. Dreaming-drowsy context	0.08	0.23	0.01	0.07	--[1]	--[1]
C1. Recreating therapeutic dialog	1.48	0.43	1.37	0.42	0.16	0.84
C2. Apply therapy	1.87	0.086	2.30	0.65	0.98	0.01*
C3. Relationship fantasies	0.20	0.22	0.27	0.23	--[1]	--[1]
D1. Positive emotions	2.33	0.37	2.47	0.26	0.95	0.05
D2. Negative emotions	1.26	0.30	1.08	0.23	0.99	0.01*
E. Significant other, sharing intersession experience	0.76	0.59	0.56	0.40	--[1]	--[1]
WAI Bond	4.98	0.10	4.99	0.04	--[1]	--[1]
WAI Task	4.48	0.70	4.36	0.19	--[1]	--[1]
WAI Goal	4.91	0.31	4.89	0.16	--[1]	--[1]
WAI Total	4.79	0.33	4.75	0.09	--[1]	--[1]

Abbreviations: M, mean; n, number of items; SCL, GSI of the Symptom Checklist; WAI, Working Alliance Inventory; --1, does not meet the requirements.

[a] p values of single-sided t-tests, null hypothesis is "no decrease after switching therapy setting".

[b] p values of single-sided t-tests, null hypothesis is "no improvement after switching therapy setting".

*$p < .05$.

Single case data correspond to a sequence of observations, that is, a time series (Borckardt et al., 2008). The order of the measuring points is crucial, and they depend on each other. This violates the assumption of independence (Borckardt et al., 2008). Autoregressive (AR) models have been developed to statistically handle the dependence between data points that are ordered in time (Borckardt et al., 2008). AR coefficients can measure how the observations are related.

Initially, the time series character of the data was ignored and treated as grouped by the switch from a "face-to-face setting" to a "video-based setting". In a second step, we fitted AR models to the grouped data. The aim was to determine whether structural changes were introduced by switching the therapy method from face-to-face to video-based treatment. We determined the order of the AR model and analyzed whether it changed during the switch.

To analyze the dynamic development of selected variables, vector autoregression (VAR) was calculated. VAR estimates the linear regression parameters between two vectors, that is, values of a variable from previous sessions. To run multivariate time series models, it was first necessary to remove trends by applying Hodrick–Prescott filters. Afterwards, VAR models with a maximum lag of 2, that is, the two previous sessions were calculated in both parts of the data sets (face-to-face and video-based conditions). VAR concerned the variables *Positive emotions*, *Negative emotions*, *GSI* of the SCL, and the mean of WAI. Significant results indicate signs of interrelated dynamics of these variables at the corresponding time of measurement.

3 | RESULTS

3.1 | Descriptive data

Descriptive data for each variable are shown in Table 1. Symptom burden in the SCL-K-9 (Klaghofer & Brähler, 2001) shows a slight decrease on average in the video-based setting compared to face-to-face treatment (from 1.92 to 1.88), whereas the extent of therapeutic alliance in the Working Alliance Inventory (WAI-SR; Hatcher & Gillaspy, 2006; Wilmers et al., 2008) hardly differs and is at a high level. Figures 1 and 2 show the process and the boxplots of the single variables for face-to-face and video-based setting. The scales of the intersession experiences are discussed in more detail below.

3.2 | Differences between therapy settings

In the next step, Shapiro Wilk normality tests were applied, showing normality for the following scales: *Intensity of intersession experience*, *Emotive problem-solving context*, *Recreating therapeutic dialogue*, *Apply therapy*, *Positive emotions*, *Negative emotions* of the IEQ and the GSI of the SCL-K-9 in at least one of the time intervals before or after switching the therapy condition. The p values and group means of one-sided Welsh tests comparing those group means are given in Table 1. Only the factor *Intensity of intersession experience* showed a significant decrease after switching to the video-based setting (keeping in mind that *Negative emotions* and SCL use different orders on their scales). The variables *Emotive problem-solving context*, *Apply therapy*, and *Negative emotions* showed significant improvements (see Table 1). However, this analysis does not answer the question of whether this improvement was due to the video-based therapy. There was no significant difference in symptom severity between face-to-face and video-based treatment. However, as shown in Figure 2, descriptively, an improvement in symptom severity occurred over the entire course of psychotherapy.
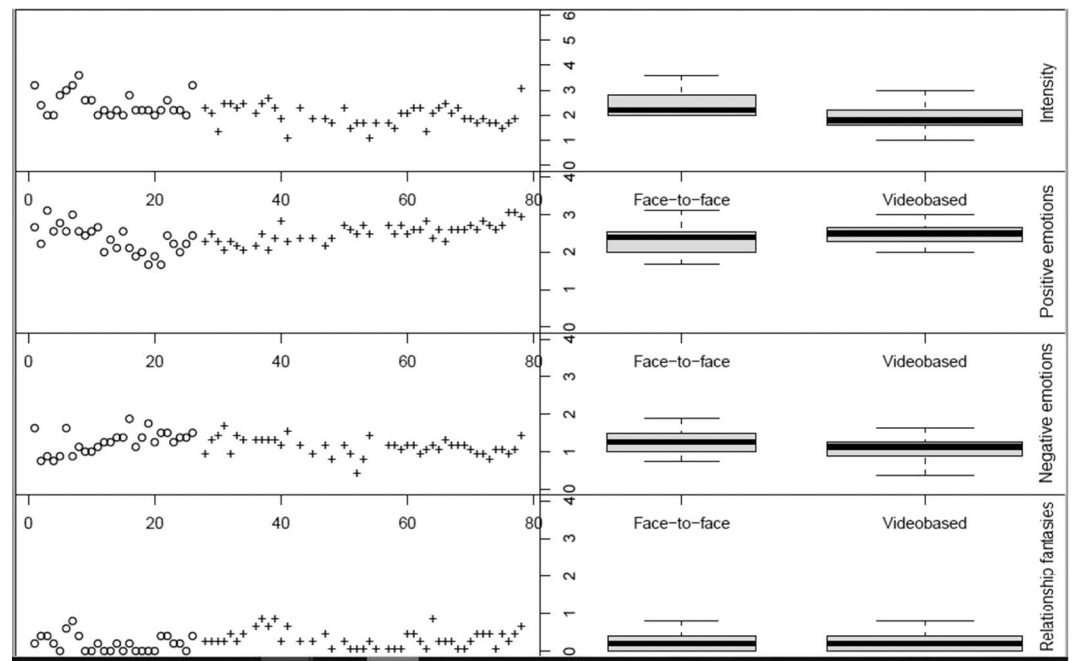

FIGURE 1 Time series and boxplots of intersession processes in the face-to-face and video-based settings. o, face-to-face; +, video-based.
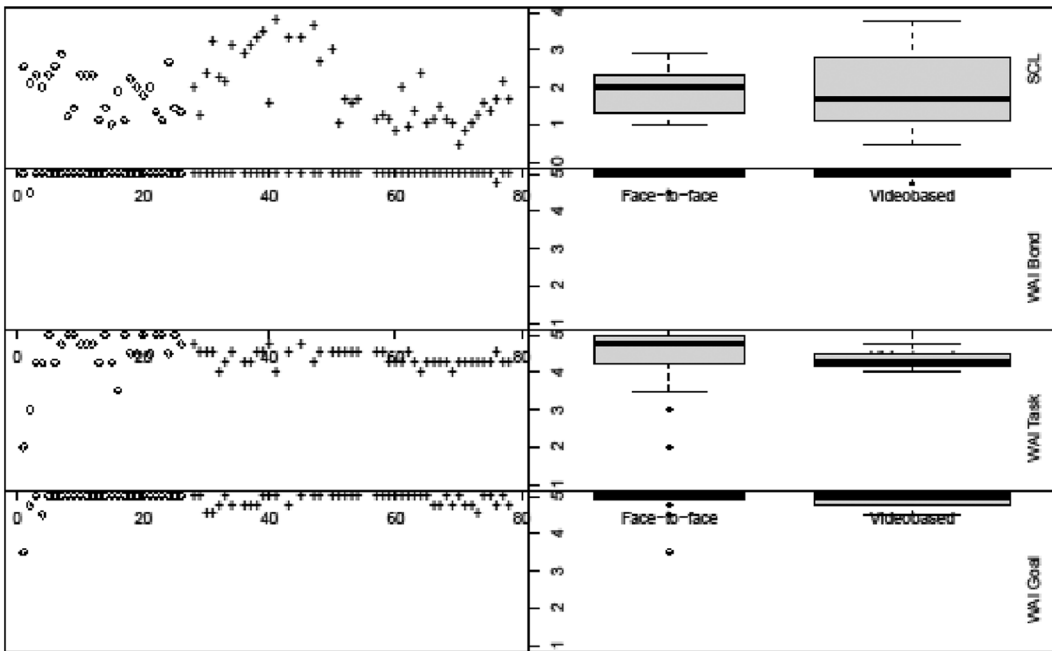
FIGURE 2 Time series and boxplots of symptom severity and working alliance in the face-to-face and video-based setting. o, face-to-face; +, video-based. SCL, GSI of the Symptom Checklist; WAI, mean of the Working Alliance Inventory.

3.3 | Time series analysis

Applying AR models to the data, the largest changes occurred for the variables *GSI* of the SCL and the task scale of the WAI. Small differences were seen in the factors *Recreating therapeutic dialogue*, *Relationship fantasies*, *Negative emotions*, and the *goal* scale of the WAI (see Table 2).

The VAR model for the face-to-face condition revealed that a single step backward dependency of WAI on the predecessors yielded the best *p* value for its *F*-test (0.09). Table 3 shows that in the VAR model of the face-to-face setting, the WAI score one step prior ($t-1$) is significant ($p = 0.04$). This means that the current WAI value depends on the immediately previous WAI value.

Within the video-based part of the data set, a lag 2 model again for WAI received the highest significance ($p = 0.04$). WAI ($t-1$) and WAI ($t-2$) achieved significant values in the video-based setting (Table 4). For the variables SCL, Positive Emotions, and Negative Emotions, no fitting VAR models were found.

3.4 | Analysis of nonverbal synchrony

The synchronies of each of the 28 face-to-face and 57 video-based sessions were expressed by effect sizes ESabs and ESnoabs. We found overall significant synchronies in both types of sessions (Table 5). The polarity of movement synchrony was positive, which in the case of ESnoabs indicated that in-phase synchronization prevailed. Some sessions yielded negative ESnoabs, suggesting that in those sessions, patient and therapist displayed antiphasic behavior.

Correlating synchrony with the variables SCL, WAI, positive emotions and negative emotions, no significant correlations were obtained with ESabs. Table 6 shows the results of the Pearson correlations of ESnoabs with the

TABLE 2 Order p of fitted AR(p) process by group

	Face-to-face	Video-based
Intersession Experiences		
A. Intensity of intersession experience	1	1
B1. Emotive problem-solving context	0	0
B2. Dreaming-drowsy context	0	0
C1. Recreating therapeutic dialogue	0	1
C2. Apply therapy	0	0
C3. Relationship fantasies	1	2
D1. Positive emotions	2	2
D2. Negative emotions	0	1
E. Significant other, sharing intersession experience	0	0
WAI Bond	0	0
WAI Task	1	3
WAI Goal	0	1
WAI Total	1	1
SCL	0	3

Abbreviations: SCL, GSI of the Symptom Checklist; WAI, Working Alliance Inventory.

TABLE 3 WAI VAR (1) model for face-to-face setting

	Estimate	SD	t	p
Positive emotions ($t-1$)	−0.17	0.11	−1.63	0.12
Negative emotions ($t-1$)	−0.17	0.13	−1.29	0.21
SCL ($t-1$)	−0.02	0.05	−0.30	0.77
WAI ($t-1$)	−0.48	0.22	−2.18	0.04*
Const	0.01	0.02	0.41	0.69

Abbreviations: SCL, GSI of the Symptom Checklist; WAI, mean of the Working Alliance Inventory.
*$p < 0.05$.

variables mentioned in face-to-face and video-based condition. Here, a significant negative correlation was found with SCL ($r = -0.38$, $p = 0.012$) and a positive significant correlation with positive emotions ($r = 0.40$, $p = 0.008$), both in the video-based setting but not in the face-to-face setting.

4 | DISCUSSION

The present single-case study examined the process of a long-term psychodynamic psychotherapy switching from a face-to-face to a video-based setting in terms of intersession experiences, symptom severity, therapeutic alliance, and nonverbal synchrony. We found significant improvements in some aspects of intersession experiences after switching to video-based therapy, as well as a significant negative correlation of

TABLE 4 WAI VAR(2) model for video-based setting

	Estimate	SD	t	p
Positive emotions ($t-1$)	−0.08	0.07	−1.20	0.24
Negative emotions ($t-1$)	−0.04	0.06	−0.66	0.51
SCL ($t-1$)	0.01	0.02	0.29	0.77
WAI ($t-1$)	−0.43	0.17	−2.53	0.02*
Positive emotions ($t-2$)	−0.11	0.07	−1.45	0.16
Negative emotions ($t-2$)	−0.01	0.06	−0.27	0.79
SCL ($t-2$)	−0.00	0.02	−0.04	0.97
WAI ($t-2$)	−0.36	0.16	−2.21	0.03*
Const	−0.00	0.01	−0.25	0.81

Abbreviations: SCL, GSI of the Symptom Checklist; WAI, mean of the Working Alliance Inventory.
*$p < 0.05$.

TABLE 5 Synchrony: descriptives and correlations of patient–therapist synchronies in face-to-face and online sessions

	Face-to-face setting $n = 28$			Video-based setting $n = 57$		
	M	SD	p^a	M	SD	p^b
ESabs	0.88	1.29	<0.01	0.99	0.93	<0.001
ESnoabs	11.11	17.34	<0.01	4.48	11.41	<0.01

Abbreviations: ESabs, synchrony effect size per session using absolute cross-correlation values; ESnoabs, synchrony effect size per session not using absolute cross-correlation values; M, mean; n, number of items.
[a]p values of single-sided t-tests, null hypothesis is "no synchrony is present in face-to-face sessions."
[b]p values of single-sided t-tests, null hypothesis is "no synchrony is present in video-based sessions."

TABLE 6 Pearson correlations of patient–therapist synchrony (ESnoabs) with other process variables in face-to-face and video-based setting

	Face-to-face		Video-based	
	r	p	r	p
SCL	0.04	0.87	−0.38*	0.01
WAI	−0.16	0.46	−0.04	0.81
Positive emotions	0.33	0.12	0.40**	0.01
Negative emotions	−0.22	0.32	−0.25	0.11

Abbreviations: r, Pearson correlation; SCL, GSI of the Symptom Checklist; WAI, mean of the Working Alliance Inventory.
*$p < 0.05$ level (two tailed).; **$p < 0.01$ level (two tailed).

symptom burden with nonverbal synchrony between client and therapist and a positive correlation of positive emotions between therapy sessions and nonverbal synchrony in this setting. Therapeutic alliance remained relatively stably high in both settings; symptom burden decreased slightly but nonsignificantly. The time series analyses also showed some interesting results.

In general, the results of the study showed that symptom severity improved descriptively, but not significantly, across the entire course of psychotherapy. The increase in symptom burden in the sessions after the switch to the video-based setting could be related to the fact that another fertilization attempt was made during this time, which was very stressful for the patient and again unsuccessful. There were significant changes, however, in the therapeutic relationship, intersession experiences, and synchronous behavior from the face-to-face to the video-based setting.

While there were no significant differences between the two conditions with regard to the average symptom severity, the behavior of this univariate time series changed when switching to the video-based setting; this was also true, in a less pronounced way, for the task scale of the WAI. This means that symptom severity can be predicted for approximately 2–3 sessions in the video-based setting. Thus, symptom burden could be estimated somewhat earlier in the video-based setting because the severity of the current session was related to the severity of 2–3 sessions ago. This could not be predicted in the face-to-face setting. The same was found to happen with the task-scale of the WAI. For VAR models, a significant change from a lag-1 to a lag-2 dependency could be shown for WAI with changing therapy conditions. The results of this long-term psychodynamic treatment, delivered face-to-face and then video-based, are in line with empirical findings from the study by Chavooshi et al. (2016). These authors found that a short-term psychodynamic approach was effective in patients with somatoform disorders in the video-based setting compared to treatment-as-usual (Chavooshi et al., 2016). Another study by Lemma and Fonagy (2013) likewise showed that a short-term psychodynamic approach with self-help materials guided by a therapist could reduce initial symptom severity. Although it is difficult to compare the different study designs (single case analysis with long-term psychotherapy, randomized controlled design of a very short-term therapy [Chavooshi et al., 2016], and a feasibility study with therapist support and self-help material [Lemma & Fonagy, 2013]), these first results are very encouraging. They show that it is possible for psychodynamic psychotherapy, which commonly focuses on aspects such as transference and countertransference, that is, the direct work in the therapeutic relationship, to be administered via video-based settings and the internet. However, these particular aspects of interpretation, as well as transference and countertransference in the process, should be further investigated in studies based on larger sample sizes and conducted in randomized controlled designs.

Regarding intersession experiences, we found a decrease in *Intensity of intersession experience* and improvements in *Emotive problem-solving context*, *Apply therapy* and *Negative emotions* in the video-based setting compared to the face-to-face interaction. Only one study to date has examined the course of intersession experiences during psychotherapy in an outpatient sample of Anorexia nervosa (Hartmann et al., 2016), which also showed that the intensity of intersession experiences started at a high level and slowly decreased. This may be because, at the beginning of therapy, patients intensively deal with what exactly they have discussed and how they can implement it in their lives. At the beginning of therapy, they will probably also be more aware of the discussed topics in everyday life and between sessions and therefore perceive this as more intensive (Hartmann et al., 2016). In the course of psychotherapy, patients often learn to know very well where their problems lie and probably deal with their problems less intensively between sessions. Patients may also have learned to discuss everything essential within the therapy session with the therapist. Our present results of improvement in applying therapeutic learning, emotive problem-solving context, and negative emotions are also in line with many results of the study by Hartmann et al. (2016). These authors also found that patients with a good outcome showed the lowest levels of therapeutic learning and an improvement in the emotive problem-solving context. In contrast to the study by Hartmann et al. (2016), we were able to show a significant improvement of negative emotions in the intersession processes for the video-based setting. As these aspects have not yet been studied intensively, it is difficult to interpret this change as an effect of the video-based setting. An alternative explanation would be that videoconference-mediated psychotherapy is perceived as less intensive not only during the session but also between sessions.

In addition, we were able to show that the variables studied, such as intersession processes, symptom severity, and the therapeutic relationship, were temporally independent of each other in both the face-to-face and video-based settings. Thus, if symptom severity changes, this need not mean that the other variables change as well. Only the therapeutic alliance showed significant autocorrelations, that is, the current WAI score correlated with the

previous WAI score. This pattern was even more evident with higher autocorrelations in the video-based relationship. There, the current WAI score even correlated with the WAI score from the two previous sessions. At the time of switching to video-based therapy, therapist and client had known each other for a longer period of time, so this may also have contributed to the fact that the working alliance was stronger than in the face-to-face sessions. However, this higher autocorrelation could also indicate that the construct of therapeutic alliance—at least with this patient—is a quite stable one. This was in line with empirical findings from other studies, which also showed a good quality of the therapeutic relationship for video-based psychotherapy, especially with cognitive-behavioral therapy methods (Backhaus et al., 2012; Bashshur et al., 2016; Jenkins-Guarnieri et al., 2015; Lopez et al., 2019). Our study, however, was the first to systematically examine a single case over a long-term course of psychodynamic psychotherapy. It is important to note that the therapeutic alliance in the therapy studied was already very strong before the change to the video-based setting. This was also maintained during the video-based sessions. Therefore, caution is required when assuming that this always takes place in this manner. It could also make a difference if a therapy takes place as a video-based therapy from the beginning. Further studies examining the course of variables such as the therapeutic relationship are needed.

The synchronous movement behavior between therapist and patient was clearly present in most of the sessions, which means that the movement behavior of one person conditioned that of the other. However, a detailed view on the data also showed that in some sessions the behavior of therapist and patient was antiphasic, that is, they did not move at the same time, but rather moved or did not move in the same way. Here it would be interesting to analyze the content of these sessions in more detail. Possibly, topics could have been dealt with here that were difficult for the patient or therapist and accordingly led to less synchronous, empathically attuned physical behavior. Especially, as we found a significant negative correlation between symptom severity and synchrony in the video-based setting only. This means that higher symptom distress was associated with lower synchrony in the video-based setting. At the same time, an improvement in positive emotions in the intersession processes was significantly associated with an increase in synchrony measured in the subsequent session. This is a very interesting finding that calls for further investigation. Presumably, especially in a video-based setting, how the therapist's contact is mediated via the webcam is of great importance. This concerns direct eye contact, that is, whether the patient has the impression of being looked at directly by the therapist. However, it also concerns the therapist's movements, whether the therapist turns toward the webcam or whether he or she is thinking, for example, while looking to the side. Presumably, these processes, which are reminiscent of the early childhood scene between caregiver and child (Bowlby, 1979), are especially important in relationships mediated by distance. The results are consistent with other studies on synchrony (Altmann et al., 2020; Feldman, 2015; Kupper et al., 2015; Paulick et al., 2018; Tschacher et al., 2014). For example, Altmann et al. (2020) investigated the relationship between synchrony and therapy outcomes in two different therapy procedures. They found that in psychodynamic psychotherapy, the greatest effects were found with regard to the therapeutic relationship and synchrony. For the therapy outcome, however, they could only show a trend. There was no significant connection in psychodynamic psychotherapy between synchronous movements and therapy outcomes. Our study did not show a correlation between synchrony and the therapeutic relationship, which was probably because the patient experienced an almost stable, very good therapeutic relationship even after the change to the video-based setting. Furthermore, in our study, we were able to show that there was a significant correlation between positive emotions between sessions and synchronous behavior in the video-based session. This is in line with the findings of Tschacher et al. (2014), who found that synchronous behavior predicted a positive effect in an experiment on dyadic social interactions.

5 | LIMITATIONS AND FUTURE DIRECTIONS

First, it should be mentioned that the generalizability of single-case analyses is limited (Kazdin, 2002). Concerning the evidence hierarchy of study designs in clinical psychology and psychotherapy, they are therefore placed on the lowest level. Their goals are rather to contribute to the generation of hypotheses and

exploration (Chambless & Hollon, 1998). The single case study presented here is the first study to systematically investigate the switch from a face-to-face setting to a video-based setting in psychodynamic long-term therapy. The study pointed out that symptom severity stabilized in the video-based condition and throughout psychotherapy, although there were no significant differences between the start and end of psychotherapy. The therapeutic relationship was also stable in the video-based setting. Furthermore, this single-case study described links between intersession processes and in-session nonverbal synchrony. In the context of the pandemic in 2020–2021, many psychotherapists worldwide were forced to use video-based psychotherapy overnight (Aafjes-van Doorn et al., 2020). In Austria, for example, this form of psychotherapy was also recognized by statutory health insurance (Probst et al., 2020). Further studies with randomized controlled designs and larger group sizes are urgently needed to investigate the initial findings for psychodynamic psychotherapy found here. It is unclear how emotional processes, such as those measured via synchronous behavior patterns, can be mediated via video conferencing. Although in a pandemic the form of videoconferencing appeared to be a tried and tested method for many psychotherapists worldwide, there are now also numerous studies that show that this form of psychotherapy only comes close to face-to-face contact. The study by Aafjes-van Doorn et al. (2020) suggested that when therapists are interviewed, they experience a similar contact as in face-to-face settings. The extent to which therapists and patients experience video-based contact similar to face-to-face contact appears to depend on several factors. In the Aafjes-van Doorn et al.'s (2020) study, a positively evaluated online therapeutic relationship depended on the use of different methods by the therapist and on whether patients were generally positive about online therapy. In light of that study, techniques central to psychodynamic procedures, such as transference and counter-transference, should be examined more closely. For example, it may be conceivable to use the Transference Work Scale (Ulberg et al., 2014) to examine transference and countertransference work more closely over time, especially at the interface between face-to-face and video-based settings.

Finally, it should be mentioned that only self-assessed questionnaires were used in the present individual case analysis. In further studies, instruments that are assessed by observers, for example, observer-based ratings of the therapeutic relationship, should also be used.

6 | CONCLUSION

The results of the study provide a detailed insight into the processes of a psychodynamic psychotherapy that switched from face-to-face setting to video-based treatment. It could be shown that the therapeutic alliance as well as the symptom burden did not experience any significant changes or deteriorations due to the setting switch, but remained relatively stable. The intersession experiences of the client showed a decrease in *Intensity of intersession experience* and increases in *Emotive problem-solving context*, *Apply therapy* and *Negative emotions* in the video-based setting compared to the face-to-face setting. The nonverbal synchrony between therapist and client also was clearly present in most of the sessions. These findings provide starting points to be investigated in more detail in future studies.

Thus, the methodology used in this presented study is well suited to investigate the question that psychodynamic psychotherapy works in a similar way in the video-based setting as in the face-to-face setting. Future studies should examine this using larger samples.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICS STATEMENT

Ethics approval was not obtained due to its character as a case report. For this reason and because of the scientific evaluation of a usual psychotherapeutic treatment by a licensed therapist it was regarded appropriate merely to obtain written informed consent concerning the collection and publication of her anonymized data. Moreover, this study was carried out in strict compliance with APA ethical standards throughout the treatment.

ORCID

Sylke Andreas 🔟 http://orcid.org/0000-0002-1060-1411
Thorsten-Christian Gablonski 🔟 http://orcid.org/0000-0001-9742-9476
Jennifer Kadur 🔟 http://orcid.org/0000-0003-2876-2704

PEER REVIEW

The peer review history for this article is available at https://publons.com/publon/10.1002/jclp.23411

REFERENCES

Aafjes-van Doorn, K., Békés, V., & Prout, T. A. (2020). Grappling with our therapeutic relationship and professional self-doubt during covid-19: Will we use video therapy again? *Counselling Psychology Quarterly, 34*, 1–12. https://doi.org/10.1080/09515070.2020.1773404

Alonso, J., Angermeyer, M. C., Bernert, S., Bruffaerts, R., Brugha, T. S., Bryson, H., de Girolamo, G., Graaf, R., Demyttenaere, K., Gasquet, I., Haro, J. M., Katz, S. J., Kessler, R. C., Kovess, V., Lépine, J. P., Ormel, J., Polidori, G., Russo, L. J., Vilagut, G., ... ESEMeD/MHEDEA Investigators, European Study of the Epidemiology of Mental Disorders (ESEMeD), P. (2004). Use of mental health services in Europe: Results from the European study of the epidemiology of mental disorders (ESEMeD) project. *Acta Psychiatrica Scandinavica, 109*(420), 47–54. https://doi.org/10.1111/j.1600-0047.2004.00330.x

Altmann, U., Schoenherr, D., Paulick, J., Deisenhofer, A.-K., Schwartz, B., Rubel, J. A., Stangier, U., Lutz, W., & Strauss, B. (2020). Associations between movement synchrony and outcome in patients with social anxiety disorder: Evidence for treatment specific effects. *Psychotherapy Research, 30*(5), 574–590. https://doi.org/10.1080/10503307.2019.1630779

American Psychiatric Association. (2009). Diagnostic and statistical manual of mental disorders: DSM-IV-TR (4th ed., text revision). American Psychiatric Association.

Andersson, G., & Cuijpers, P. (2009). Internet-based and other computerized psychological treatments for adult depression: A meta-analysis. *Cognitive Behaviour Therapy, 38*(4), 196–205. https://doi.org/10.1080/16506070903318960

Andreas, S., Gablonski, T.-C., Hiesberger, S., Senft, B., Koller, I., & Schulz, H. (2016). Intersession-Prozesse in stationärer psychotherapeutischer Behandlung: Ist die Einzel- oder die Gruppentherapie entscheidender für die therapeutische Beziehung und das Therapieergebnis? [Intersession-Processes in inpatient therapy: Are the individual or group therapy important for the therapeutic relationship and the outcome?]. *Psychodynamische Psychotherapie, 15*(4), 206–218.

Andrews, G., Cuijpers, P., Craske, M. G., McEvoy, P., & Titov, N. (2010). Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: A meta-analysis. *PLoS One, 5*(10), e13196. https://doi.org/10.1371/journal.pone.0013196

Backhaus, A., Agha, Z., Maglione, M. L., Repp, A., Ross, B., Zuest, D., Rice-Thorp, N. M., Lohr, J., & Thorp, S. R. (2012). Videoconferencing psychotherapy: A systematic review. *Psychological Services, 9*(2), 111–131. https://doi.org/10.1037/a0027924

Barth, J., Munder, T., Gerger, H., Nuesch, E., Trelle, S., Znoj, H., Juni, P., & Cuijpers, P. (2013). Comparative efficacy of seven psychotherapeutic interventions for patients with depression: A network meta-analysis. *PLoS Medicine, 10*(5), e1001454. https://doi.org/10.1371/journal.pmed.1001454

Bashshur, R. L., Shannon, G. W., Bashshur, N., & Yellowlees, P. M. (2016). The empirical evidence for telemedicine interventions in mental disorders. *Telemedicine and E-Health*, *22*(2), 87–113. https://doi.org/10.1089/tmj.2015.0206

Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. Hoeber Medical Division

Berryhill, M. B., Culmer, N., Williams, N., Halli-Tierney, A., Betancourt, A., Roberts, H., & King, M. (2019). Videoconferencing psychotherapy and depression: A systematic review. *Telemedicine and E-Health*, *25*(6), 435–446. https://doi.org/10.1089/tmj.2018.0058

Borckardt, J. J., Nash, M. R., Murphy, M. D., Moore, M., Shaw, D., & O'Neil, P. (2008). Clinical practice as natural laboratory for psychotherapy research: A guide to case-based time-series analysis. *American Psychologist*, *63*(2), 77–95. https://doi.org/10.1037/0003-066X.63.2.77

Bordin, E. S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research & Practice*, *16*(3), 252–260. https://doi.org/10.1037/h0085885

Bowlby, J. (1979). *The making & breaking of affectional bonds* (1st ed.). Tavistock Publications.

Chambless, D. L., & Hollon, S. D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology*, *66*(1), 7–18. https://doi.org/10.1037/0022-006X.66.1.7

Chavooshi, B., Mohammadkhani, P., & Dolatshahee, B. (2016). Efficacy of intensive short-term dynamic psychotherapy for medically unexplained pain: A pilot three-armed randomized controlled trial comparison with mindfulness-based stress reduction. *Psychotherapy and Psychosomatics*, *85*(2), 123–125. https://doi.org/10.1159/000441698

Chen, C. K., Nehrig, N., Wash, L., & Wang, B. (2020). The impact of brief dynamic interpersonal therapy (DIT) on veteran depression and anxiety. *Psychotherapy: Theory, Research, Practice, Training*, *57*(3), 464–468. https://doi.org/10.1037/pst0000282

Cohen, J. (1988). *Statistical power and analysis for the behavioral sciences* (2nd ed.). Lawrence.

Derogatis, L. R. (1994). *SCL-90-R, Symptom Checklist-90-R: Administration, scoring and procedures manual* (3rd ed.). Pearson.

Driessen, E., Cuijpers, P., Maat, S. C., de, Abbass, A. A., Jonghe, F. de, & Dekker, J. J. (2010). The efficacy of short-term psychodynamic psychotherapy for depression: A meta-analysis. *Clinical Psychology Review*, *30*(1), 25–36. https://doi.org/10.1016/j.cpr.2009.08.010

Ehrlich, L. T. (2019). Teleanalysis: Slippery slope or rich opportunity? *Journal of the American Psychoanalytic Association*, *67*(2), 249–279. https://doi.org/10.1177/0003065119847170

Elvins, R., & Green, J. (2008). The conceptualization and measurement of therapeutic alliance: An empirical review. *Clinical Psychology Review*, *28*(7), 1167–1187. https://doi.org/10.1016/j.cpr.2008.04.002

Feldman, R. (2015). Sensitive periods in human social development: New insights from research on oxytocin, synchrony, and high-risk parenting. *Development and Psychopathology*, *27*(2), 369–395. https://doi.org/10.1017/S0954579415000048

Fonagy, P., Lemma, A., Target, M., O'Keeffe, S., Constantinou, M. P., Ventura Wurman, T., Luyten, P., Allison, E., Roth, A., Cape, J., & Pilling, S. (2020). Dynamic interpersonal therapy for moderate to severe depression: A pilot randomized controlled and feasibility trial. *Psychological Medicine*, *50*(6), 1010–1019. https://doi.org/10.1017/S0033291719000928

Geller, J., & Farber, B. (1993). Factors influencing the process of internalization in psychotherapy. *Psychotherapy Research*, *3*(3), 166–180. https://doi.org/10.1080/10503309312331333769

Geller, J. D., Cooley, R. S., & Hartley, D. (1981). Images of the psychotherapist: A theoretical and methodological perspective. *Imagination, Cognition and Personality*, *1*(2), 123–146. https://doi.org/10.2190/64EY-QLW8-765A-K0KH

Gutiérrez, L. (2017). Silicon in 'pure gold'? Theoretical contributions and observations on teleanalysis by videoconference. *The International Journal of Psychoanalysis*, *98*(4), 1097–1120. https://doi.org/10.1111/1745-8315.12612

Hartmann, A. (1997). *Therapie zwischen den Stunden: Explorationen von Intersession-Prozessen [Therapy between therapy sessions: Exploration of intersession experiences]*. P. Lang.

Hartmann, A., Orlinsky, D., Weber, S., Sandholz, A., & Zeeck, A. (2010). Session and intersession experience related to treatment outcome in bulimia nervosa. *Psychotherapy*, *47*(3), 355–370. https://doi.org/10.1037/a0021166

Hartmann, A., Orlinsky, D., & Zeeck, A. (2011). The structure of intersession experience in psychotherapy and its relation to the therapeutic alliance. *Journal of Clinical Psychology*, *67*(10), 1044–1063. https://doi.org/10.1002/jclp.20826

Hartmann, A., Orlinsky, D. E., Geller, J. D., & Zeeck, A. (2003). Der Inter-Session-Fragebogen (ISF)- Ein Instrument zur Erfassung von psychotherapierelevanten Prozessen zwischen Sitzungen. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, *53*(11), 464–468. https://doi.org/10.1055/s-2003-43391

Hartmann, A., Zeeck, A., Herzog, W., Wild, B., Zwaan, M., de, Herpertz, S., Burgmer, M., Wietersheim, J., von, Tagay, S., Dinkel, A., Löwe, B., Resmark, G., Orlinsky, D., & Zipfel, S. (2016). The intersession process in psychotherapy for anorexia nervosa: Characteristics and relation to outcome. *Journal of Clinical Psychology*, *72*(9), 861–879. https://doi.org/10.1002/jclp.22293

Hatcher, R. L., & Gillaspy, J. A. (2006). Development and validation of a revised short version of the working alliance inventory. *Psychotherapy Research*, *16*(1), 12–25. https://doi.org/10.1080/10503300500352500

Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. Academic Press

Horvath, A. O., & Greenberg, L. S., 2 (1989). Development and validation of the working alliance inventory. *Journal of Counseling Psychology*, *36*(2), 223–233.

Imel, Z. E., Barco, J. S., Brown, H. J., Baucom, B. R., Baer, J. S., Kircher, J. C., & Atkins, D. C. (2014). The association of therapist empathy and synchrony in vocally encoded arousal. *Journal of Counseling Psychology*, *61*(1), 146–153. https://doi.org/10.1037/a0034943

Jenkins-Guarnieri, M. A., Pruitt, L. D., Luxton, D. D., & Johnson, K. (2015). Patient perceptions of telemental health: Systematic review of direct comparisons to in-person psychotherapeutic treatments. *Telemedicine and E-Health*, *21*(8), 652–660. https://doi.org/10.1089/tmj.2014.0165

Johansson, R., & Andersson, G. (2012). Internet-based psychological treatments for depression. *Expert Review of Neurotherapeutics*, *12*(7), 861–870. https://doi.org/10.1586/ern.12.63

Johansson, R., Ekbladh, S., Hebert, A., Lindstrom, M., Moller, S., Petitt, E., Poysti, S., Larsson, M. H., Rousseau, A., Carlbring, P., Cuijpers, P., & Andersson, G. (2012). Psychodynamic guided self-help for adult depression through the internet: A randomised controlled trial. *PLoS One*, *7*(5), e38021. https://doi.org/10.1371/journal.pone.0038021

Juhos, C., & Meszaros, J. (2019). Psychoanalytic psychotherapy and its supervision via videoconference: Experience, questions and dilemmas. *American Journal of Psychoanalysis*, *79*(4), 555–576.

Kazdin, A. E. (Ed.). (2002). *Methodological issues & strategies in clinical research* (3rd ed.). American Psychological Association.

Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). Oxford University Press.

Klaghofer, R., & Brähler, E.(2001). Konstruktion und Teststatistische Prüfung einer Kurzform der SCL-90-R. *Zeitschrift für Klinische Psychologie, Psychiatrie und Psychotherapie 49*, 115–124.

Knox, S., Goldberg, J. L., Woodhouse, S. S., & Hill, C. E. (1999). Clients' internal representations of their therapists. *Journal of Counseling Psychology*, *46*(2), 244–256. https://doi.org/10.1037/0022-0167.46.2.244

Koole, S. L., & Tschacher, W. (2016). Synchrony in psychotherapy: A review and an integrative framework for the therapeutic alliance. *Frontiers in Psychology*, *7*, 862. https://doi.org/10.3389/fpsyg.2016.00862

Kupper, Z., Ramseyer, F., Hoffmann, H., & Tschacher, W. (2015). Nonverbal synchrony in social interactions of patients with schizophrenia indicates socio-communicative deficits. *PLoS One*, *10*(12):e0145882. https://doi.org/10.1371/journal.pone.0145882

Lemma, A., & Fonagy, P. (2013). Feasibility study of a psychodynamic online group intervention for depression. *Psychoanalytic Psychology*, *30*(3), 367–380. https://doi.org/10.1037/a0033239

Lopez, A., Schwenk, S., Schneck, C. D., Griffin, R. J., & Mishkind, M. C. (2019). Technology-based mental health treatment and the impact on the therapeutic alliance. *Current Psychiatry Reports*, *21*(8), 76. https://doi.org/10.1007/s11920-019-1055-7

Merchant, J. (2016). The use of skype in analysis and training: A research and literature review. *Journal of Analytical Psychology*, *61*(3), 309–328.

Onghena, P. (2005). Single-case designs. In B. Everitt & D. C. Howell (Eds.), *Encyclopedia of statistics in behavioral science* (Vol. 4, pp. 1850–1854). Wiley.

Orlinsky, D. E., & Geller, J. D. (1993). Patient's representations of their therapists and therapy: New measures. In N. E. Miller (Ed.), *Psychodynamic treatment research. A handbook for clinical practice* (pp. 423–466). Basic Books.

Orlinsky, D. E., & Tarragona, M. (1986). *Intersession experience questionnaire (patient form)*. University of Chicago Committee on Human Development.

Owen, J., Quirk, K., Hilsenroth, M. J., & Rodolfa, E. (2012). Working through: In-session processes that promote between-session thoughts and activities. *Journal of Counseling Psychology*, *59*(1), 161–167. https://doi.org/10.1037/a0023616

Paulick, J., Rubel, J. A., Deisenhofer, A.-K., Schwartz, B., Thielemann, D., Altmann, U., Boyle, K., Strauß, B., & Lutz, W. (2018). Diagnostic features of nonverbal synchrony in psychotherapy: Comparing depression and anxiety. *Cognitive Therapy and Research*, *42*(5), 539–551. https://doi.org/10.1007/s10608-018-9914-9

Prinz, U., Nutzinger, D., Schulz, H., Petermann, F., Braukhaus, C., & Andreas, S. (2008). Die Symptom-Checkliste-90-R und ihre Kurzversionen: Psychometrische Analysen bei Patienten mit Psychischen Erkrankungen. *Physikalische Medizin, Rehabilitationsmedizin, Kurortmedizin*, *18*(6), 337–343. https://doi.org/10.1055/s-0028-1093323

Probst, T., Stippl, P., & Pieh, C. (2020). Changes in provision of psychotherapy in the early weeks of the Covid-19 lockdown in Austria. *International Journal of Environmental Research & Public Health*, *17*(11), 3815.

Ramseyer, F., Kupper, Z., Caspar, F., Znoj, H., & Tschacher, W. (2014). Time-series panel analysis (TSPA): Multivariate modeling of temporal associations in psychotherapy process. *Journal of Consulting and Clinical Psychology*, *82*(5), 828–838. https://doi.org/10.1037/a0037168

Ramseyer, F., & Tschacher, W. (2011). Nonverbal synchrony in psychotherapy: Coordinated body movement reflects relationship quality and outcome. *Journal of Consulting and Clinical Psychology*, *79*(3), 284–295. https://doi.org/10.1037/a0023419

Ramseyer, F., & Tschacher, W. (2016). Movement coordination in psychotherapy: Synchrony of hand movements is associated with session outcome. A single-case study. *Nonlinear Dynamics, Psychology, and Life Sciences*, *20*(2), 145–166.

Scharff, J. S. (2012). Clinical issues in analyses over the telephone and the internet. *International Journal of Psychoanalysis*, *93*(1), 81–95. https://doi.org/10.1111/j.1745-8315.2011.00548.x

Schoenherr, D., Paulick, J., Worrack, S., Strauss, B. M., Rubel, J. A., Schwartz, B., Deisenhofer, A.-K., Lutz, W., Stangier, U., & Altmann, U. (2019). Quantification of nonverbal synchrony using linear time series analysis methods: Lack of convergent validity and evidence for facets of synchrony. *Behavior Research Methods*, *51*(1), 361–383. https://doi.org/10.3758/s13428-018-1139-z

Sharpley, C. F., Halat, J., Rabinowicz, T., Weiland, B., & Stafford, J. (2001). Standard posture, postural mirroring and client-perceived rapport. *Counselling Psychology Quarterly*, *14*(4), 267–280. https://doi.org/10.1080/09515070110088843

Titov, N. (2011). Internet-delivered psychotherapy for depression in adults. *Current Opinion in Psychiatry*, *24*(1), 18–23. https://doi.org/10.1097/YCO.0b013e32833ed18f

Trout, D. L., & Rosenfeld, H. M. (1980). The effect of postural lean and body congruence on the judgment of psychotherapeutic rapport. *Journal of Nonverbal Behavior*, *4*(3), 176–190. https://doi.org/10.1007/BF00986818

Tschacher, W., & Haken, H. (2019). *The process of psychotherapy: Causation and chance*. Springer International Publishing. https://doi.org/10.1007/978-3-030-12748-0

Tschacher, W., & Meier, D. (2020). Physiological synchrony in psychotherapy sessions. *Psychotherapy Research*, *30*(5), 558–573. https://doi.org/10.1080/10503307.2019.1612114

Tschacher, W., Rees, G. M., & Ramseyer, F. (2014). Nonverbal synchrony and affect in dyadic interactions. *Frontiers in Psychology*, *5*, 1323. https://doi.org/10.3389/fpsyg.2014.01323

Ulberg, R., Amlo, S., & Høglend, P. (2014). Manual for transference work scale; A micro-analytical tool for therapy process analyses. *BMC Psychiatry*, *14*(1), 1–14. https://doi.org/10.1186/s12888-014-0291-y

Wilmers, F., Munder, T., Leonhart, R., Herzog, T., Plassmann, R., Barth, J., & Linster, H. W. (2008). Die deutschsprachige Version des Working Alliance Inventory—Short Revised (WAI-SR)—Ein schulenübergreifendes, ökonomisches und empirisch validiertes Instrument zur Erfassung der therapeutischen Allianz. *Klinische Diagnostik und Evaluation*, *1*(3), 343–358.

Wind, T. R., Rijkeboer, M., Andersson, G., & Riper, H. (2020). The COVID-19 pandemic: The 'black swan' for mental health care and a turning point for e-health. *Internet Interventions*, *20*, 100317. https://doi.org/10.1016/J.INVENT.2020.100317

Wittchen, H. U., & Jacobi, F. (2005). Size and burden of mental disorders in Europe—A critical review and appraisal of 27 studies. *European Neuropsychopharmacology*, *15*(4), 357–376.

Yokotani, K., Takagi, G., & Wakashima, K. (2020). Nonverbal synchrony of facial movements and expressions predict therapeutic alliance during a structured psychotherapeutic interview. *Journal of Nonverbal Behavior*, *44*(1), 85–116. https://doi.org/10.1007/s10919-019-00319-w

Zeeck, A., & Hartmann, A. (2005). Relating therapeutic process to outcome: Are there predictors for the short-term course in anorexic patients? *European Eating Disorders Review*, *13*(4), 245–254. https://doi.org/10.1002/erv.646